SKECHERS PERFORMANCE
LOS ANGELES MARATHON

2019 Opening Day Dodgers

CICLAVIA

LA! PRIDE

Los Angeles Regional Public Safety Mobility Acceleration Coalition

Los Angeles Regional Year 1 MAC Report

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Executive Summary

In 2018, the Mobility Acceleration Coalition (MAC) was formed with funding from the Department of Homeland Security (DHS) Science & Technology Directorate (S&T) to share lessons learned between the Harris County and Los Angeles Regional Interoperable Communications System (LA-RICS) FirstNet Early Builder Programs (Early Builders). There were initially five Early Builders authorized to build Public Safety Long-Term Evolution (PSLTE) networks in advance of the nationwide deployment under the First Responder Network Authority (FirstNet). By 2017, Harris County LTE (HCLTE) and LA-RICS were the only two with remaining funds and continuing to operate PSLTE networks.

In exchange for the use of the FirstNet spectrum, each Early Builder had to provide deliverables for Key Learning Conditions (KLCs). The purpose of the KLCs was to document lessons learned in advance of the nationwide FirstNet deployment to accelerate the adoption of public safety broadband. Based on the different KLCs, funding sources, and other program dynamics, the HCLTE and LA-RICS programs took very different approaches.

The intent of the MAC was to share lessons learned across both regions to develop Strategic Mobility Plans to support the adoption of interoperable mobile technologies. **Through coordinated strategic planning, public safety has a unique opportunity to avoid the kinds of mistakes which have led to the adoption of non-interoperable technologies such as radios and Computer Aided Dispatch (CAD) systems which have produced significant and costly challenges for multi-jurisdictional communications.**

The MAC was designed to combine tactical deployments with strategic planning efforts. The initial scope included two tactical deployments in the Los Angeles (LA) region: 1) Inglewood “Connected Cop” to test the feasibility of replacing Mobile Data Computers (MDC) with smartphones, and 2) a pilot to be defined by the working group after project kick-off.

Although there was buy-in by LA regional stakeholders, the lack of deployment experience limited their ability to address strategic elements of interoperability without the benefit of tactical experience with the technologies. Regional executives requested that year 1 activities focus strictly on tactical deployments to develop the knowledge and experience to facilitate strategic planning activities in subsequent phases.

The working group nominated the 2019 Los Angeles Marathon (LAM) as the event for the second pilot. The budget included 100 phones along with 100 licenses for a mobile collaboration app. During LAM planning activities, Mobility 4 Public Safety (M4PS) lead contractor for the MAC, was introduced to the Homeland Security Advisory Council at Pepperdine’s School of Public Policy (HSAC@SPP). HSAC@SPP is a local non-profit whose mission is to catalyze a multi-jurisdictional and comprehensive approach to preparedness, security, and resilience in the LA region. M4PS and HSAC@SPP were able to collaborate to deliver a more comprehensive mobility deployment.

HSAC offers its SALUS Crisis Hub at no charge to public safety organizations throughout the region. The SALUS Dashboard consumes information from a variety of sources and displays it on

a single dashboard. SALUS supports the use of mobile apps as information sources; however, prior to LAM mobile apps were limited to departments with phones and/or tablets. M4PS provided nearly 200 phones for LAM. The combination of phones provided by M4PS along with the 2019 LAM Aid App provided by HSAC@SPP significantly enhanced the overall value the mobile technologies delivered.

The initial pilot deployments successfully demonstrated the value of mobile technologies to augment voice communications for first responders during pre-planned events. Real-time information sharing through mobile collaboration and survey apps significantly reduced radio traffic, improved situational awareness, and enhanced multi-agency information sharing. LAM was so successful that agencies requested the use of the phones and apps for subsequent events including Dodgers Opening Day, May Day Protests, and LA Pride. Mobility After Action Reports (AAR) are included as Appendices to this report.

The MAC budget only included product funding to support the two in-scope pilots. The time, travel, and product licenses required for LAM significantly exceeded project estimates and consumed the entire product budget. While DHS agreed to the change of focus and modified deliverable, there was no additional product funding available to support other deployments. Despite the success of the deployments, momentum and enthusiasm for strategically planning mobility adoption regionally began fading with limited products available to deploy. Recognizing that funding is a key challenge for promoting interoperable technology adoption, MAC members began exploring the viability of a no/low cost collaboration platform in order to maintain the momentum and enthusiasm for coordinated mobility adoption beyond special events.

After extensive research, it was determined that no real-time collaboration platform existed to meet the technical and financial requirements of the public safety industry. In need of tangible tools to maintain interest in strategic mobility planning, DHS agreed to a proof-of-concept (POC) to build a no/low cost public safety collaboration platform. DHS teamed M4PS with Oasys International Corporation, another DHS S&T performer specializing in low/no cost public safety solutions. They have strong expertise in Identity, Credential, and Access Management (ICAM) which is a key for any solution to be scalable to support multi-agency adoption at a regional level. M4PS and Oasys began development of the Bridge 4 Public Safety (Bridge4PS) app. This new collaboration app was deployed for LAPD Officer Juan Diaz' Funeral followed by CicLAvia in West Hollywood. Both deployments were successful, and the full Mobility AARs are Appendices to this report.

The recognition that regional coordination and sustainable deployment models are critical to the successful adoption of interoperable technologies was a key lesson learned from year 1 of the LA MAC program. This is not a new concept, but the direct impact on program momentum emphasized the importance to DHS as well as regional stakeholders. The stark contrast between the availability of HSAC-provided no-cost apps versus commercial, subscription-based apps validated the need for non-traditional planning and funding to drive coordinated adoption, especially at this infant stage of the market. M4PS thanks HSAC@SPP for its leadership and support of the mobility programs. Their innovative approach to funding much needed technologies for first responders is a model that should be explored more broadly to expand access to life saving technologies in a manner that facilitates interoperability.

Background

LA-RICS is a quasi-governmental entity formed under a Joint Powers Authority (JPA) responsible for the deployment of regional, interoperable public safety wireless voice and data networks. LA-RICS has focused primarily on infrastructure deployment and developing formal policies and procedures for the deployment and adoption of regional communications. A major focus of the LTE program is to construct public-safety grade infrastructure to provide public safety users the network coverage and reliability necessary to truly operationalize mobile broadband-enabled technologies.

HCLTE approached the program from a different perspective, in large part driven by the KLC to assess how PSLTE could be utilized during special events. The spectrum lease designated Super Bowl LI (SBLI) in 2017 as the event to document for the KLC deliverable. For this reason, the Harris County program was heavily focused on operationalizing mobile technologies through end user deployments. SBLI was a tremendous success and exceeded expectations for the operational value that mobile broadband technologies could provide. During the ten-day operational period, ten city, county, state and federal agencies representing law enforcement, fire, and EMS were able to seamlessly share information in real-time through mobile apps. Additional details about the SBLI deployment including user testimonials, presentations, and the FirstNet After Action Report (AAR) can be found at https://www.mobility4ps.com/sbli.

A key concept for creating the MAC was the expectation that there are common elements of mobility adoption which must be addressed to achieve interoperability regardless of users, use cases, or products. In an attempt to prevent first responders from showing up at incidents with "smarter" tools but still unable to communicate, stakeholders from both regions recognized that they should proactively develop a regional mobility framework to coordinate adoption activities and avoid fragmented product purchases. The mobility frameworks were intended to address topics such as:

- Regional Governance
- Identity, Credential & Access Management (ICAM)
- Cloud Strategy
- Mobility Portfolio

The goals were for:

1. Houston/Harris County area to utilize lessons learned and best practices from LA-RICS for developing regional governance, formalizing policies and procedures, and building a sustainable regional mobility program
2. Help drive mobility adoption in the LA region through lessons learned from various use cases in the Houston region for special events, daily operations, and incident response

Recognizing that LA did not have the same mobility experience as the Houston region, the scope included two tactical, pilot deployments in the LA region to influence strategic planning efforts.

1. A mobility pilot to be defined by local stakeholders for multi-agency information sharing
2. "Connected Cop" pilot with Inglewood Police Department

Key Lesson Learned #1

Both regions began by forming working groups comprised of stakeholders from different jurisdictions and disciplines. LA-RICS organized working group members from the Operations and Technology Committees and invited stakeholders from the City of Los Angeles and other jurisdictions. Shortly after kicking off the working group, the MAC held an Executive Briefing for agency executives. The briefing was well attended by leaders from City of Los Angeles, Los Angeles County, and a number of other municipalities. They all agreed with the vision of the MAC and the importance of regional coordination. They then pointed out that, unlike the Houston working group with three years of experience using the technologies, they were being asked to solve problems they didn't know they had for technologies they weren't even sure they needed.

While this was an unanticipated discovery, it was an important lesson learned for mobility planning. The use cases and operational value experienced in the Houston/Harris County area could not be fully understood by other practitioners without tangible experience applying them in their own operational environments. The executives agreed to form a MAC Executive Committee to guide working group activities. They requested that DHS modify the scope of year 1 to focus on numerous tactical deployments to gain the experience and knowledge necessary to develop a regional mobility strategy. DHS acknowledged the importance of the experience for influencing the strategic plan. They approved the modified scope and deliverable with the caveat that no additional funds were available for product deployments.

Mobility Pilot #1: Los Angeles Marathon

The working group nominated the Los Angeles Marathon (LAM) as the designated tactical deployment under the original scope. LAM is the largest annual, multi-jurisdictional event in the region and includes City of Los Angeles, City of West Hollywood/Los Angeles County, Beverly Hills, and Santa Monica. While the planning timeline was short, the Working Group and Executive Committee agreed that it was the best opportunity to demonstrate the regional value of mobile technologies to augment voice communications.

The 2019 LAM mobility deployment was highly successful. Two primary apps were used:

- 2019 LAM Aid App built in Survey123 was used by fire/EMS for tracking patient contacts and transports
- Moxtra was used by fire/EMS, law enforcement, transportation, and public works for real-time collaboration through messaging, picture/video sharing, and file sharing

As with SBLI and subsequent events in the Houston area, the use of mobile apps significantly enhanced multi-agency collaboration, improved information sharing, and reduced radio traffic.

The 2019 LAM Aid App, provided by HSAC@SPP, allowed all four jurisdictions to maintain consistent patient contact and transport counts for the first time. The ability to submit patient contact surveys simplified reporting and significantly reduced radio traffic. These simple surveys allowed field medics to capture runner information such as bib number, gender, age and chief

complaint. Once submitted, the surveys visually showed patient contacts on the 2019 LA Marathon SALUS Dashboard displayed in each of the Command Posts (CP), Multi-Agency Coordination Center and Emergency Operations Centers (EOC) activated for the event.

Moxtra was funded through the DHS MAC project and provided by M4PS. The use of organized, secure group messaging allowed real-time information sharing between field and command personnel. It also allowed for seamless information sharing between Unified Commanders in all four jurisdictions. Picture sharing proved highly valuable in expediting information sharing, reducing radio traffic, and reducing miscommunication. Groups were organized by department and function. An information architecture was developed to provide a simple means of keeping communications segregated to minimize distracting notifications and unnecessary "noise" while allowing for easy sharing across teams through the Unified Command structure. The use of public safety collaboration provided unprecedented information sharing across disciplines, departments and jurisdictions.

The complete 2019 LAM Mobility AAR[1] contains details about the technology deployment, use cases, challenges, and lessons learned.

Due to the success of LAM, LAPD and LADOT requested the use of Moxtra for Dodgers Opening Day 4 days later. Despite the extremely short planning timeline, the deployment was successful in streamlining communications across LAPD and LADOT personnel supporting the event. The app was also successfully used by LAPD for the May Day protests.

The City of West Hollywood (WeHo) and LA County also requested the use of the phones and apps to support upcoming events in WeHo including LA Pride and Carnavale.

Key Lesson Learned #2

Unfortunately, the DHS funding only included app licenses for the 100 phones estimated to be needed for the two tactical deployments in the LA region. Ultimately, the deployment included roughly 650 users for testing and implementation. Despite the tremendous success and end user enthusiasm, the momentum dwindled after the LAM After Action Briefing when agencies realized that there was no funding to maintain or scale the Moxtra deployment.

As described in the LAM Mobility AAR:

> *The mobility deployment would not have been such a success if the participating agencies had not agreed on a common set of technologies to support streamlined information sharing and collaboration across all participating organizations. The success of the event demonstrated the importance of regional strategic planning for the adoption of mobile technologies to avoid the types of interoperability issues experienced with other public safety communications technologies such as Land-Mobile Radio and CAD.*

[1] https://tinyurl.com/2019LAM-Mobility-AAR

The mobility deployment was a true demonstration of regional collaboration; however, the success of this event was possible because of "artificial" circumstances. Planning, configuration, device/app administration and collaboration technology were funded by DHS through the MAC. SALUS is a regional platform available at no cost to public safety agencies in the region; however, adoption of mobile apps is limited by departments' availability of mobile devices and/or approval from IT departments to install them on agency-managed equipment. The deployment would not have been as wide scale without the phones provided by commercial carriers.

This represents a fundamental challenge for achieving regional interoperability with new, innovative technology. The value of the products must be demonstrated to justify regional funding. Most innovation begins within individual departments, or even units, to address specific operational challenges. By the time it is proven enough to obtain larger-scale funding, there are often competing products deployed by different departments. In many cases, integration of competing products is expensive or not possible. Having access to phones and apps at no charge to the participating departments to prove the value of mobile technologies and regional coordination prior to investments being made is unusual. HSAC is a local non-profit that offers SALUS at no charge to crisis managers, first responders, and the public. As a 501(c)(3), HSAC's mission is to catalyze a multi-jurisdictional and comprehensive approach to preparedness, security, and resilience in the Los Angeles (LA) region by providing innovative technology and opportunities for engagement, capability building, and partnerships for the public, private, and civic sectors. This sort of creative model of using philanthropy to fund public safety technology should be explored to promote regional collaboration, coordinated technology adoption, alleviate the economic burden of technology acquisition and overcome resource disparities across departments for equitable and consistent adoption.

Funding and interoperability are constant challenges for public safety. The LAM proved that unconventional approaches to regional collaboration, technology adoption and product acquisition can produce transformational results for public safety. Technology is evolving rapidly, but without new models for achieving multi-jurisdictional coordination and funding mechanisms, the industry is at risk of facing significant interoperability problems with mobile data technologies and miss the opportunity to achieve the vision of public safety broadband and investment of billions of dollars to provide first responders better tools to perform their mission of saving lives and protecting property.

M4PS provided Moxtra for the May Day protests and LA Pride in early June, but no other public safety collaboration deployments could be supported due to the lack of funding. The LA Pride deployment was similar to LAM which included loaner phones, Moxtra, and the 2019 LA Pride Aid App with 2019 LA Pride SALUS Dashboard provided by HSAC@SPP. A full description of the mobility deployment can be found in the 2019 LA Pride Mobility AAR.[2]

[2]https://tinyurl.com/2019LAPrideAAR

Program Re-Alignment

Earlier in the year, the Texas Department of Public Safety (TXDPS) had formed a Broadband Strategic Advisory Group (SAG) to evaluate the needs and requirements for public safety messaging and collaboration. Members of the Houston MAC Working Group participated on the SAG. The TxDPS white paper *Public Safety Messaging: A New Frontier for Collaboration and Interoperability*[3] was published shortly after a similar paper by the South Dakota Public Safety Broadband Network (SDPSBN), *Interoperability Use with Mobile Broadband.*[4] Both papers highlight 1) the operational need for secure, public safety messaging and collaboration, and 2) unique public safety features and requirements that do not currently exist in consumer-grade apps. The South Dakota paper also highlights the need for a no cost platform to provide interoperability for all first responders without adding financial burden for departments and responders.

The excitement and subsequent loss of momentum for mobility planning validated and emphasized the point made by the LA MAC Executive Committee that tactical deployments were necessary to maintain interest in regional collaboration. With the realization that tangible products were necessary to facilitate strategic planning, MAC Working Group members began an extensive evaluation of collaboration platforms to test features and financial viability. The conclusions were that 1) no existing products could be found that met the public safety feature requirements outlined by the TxDPS SAG, and 2) no free apps were available to support wide-scale public safety adoption as emphasized by the SDPSBN.

During a TxDPS SAG workshop in May 2019, extensive discussion took place about the need for a low/no cost public safety collaboration app to replace the growing dependence by first responders on free consumer apps which have experienced known vulnerabilities, sell user data, and do not comply with public safety regulations. Key challenges contributing to this issue include:

1. Limited department issued cell phones by most first responder agencies
2. Lack of Bring Your Own Device (BYOD) policies to officially sanction the use of department-purchased apps on personal cell phones
3. Funding constraints for subscription-based apps
4. Commercial models for monetizing “free” apps based on advertising and selling user data are not viable for public safety products

With the loss of momentum for mobility planning, M4PS contacted DHS about the need for a secure, scalable public safety collaboration platform to serve this growing need amidst the challenges outlined above. M4PS requested support for a Proof-of-Concept (POC) to develop a viable platform to deliver secure collaboration capabilities at little or no cost to first responders. DHS agreed with the concept and approved the exploration of such a platform.

[3] https://www.dps.texas.gov/LawEnforcementSupport/communications/interop/documents/publicSafetyMessaging.pdf
[4] https://tinyurl.com/InteroperabilityAppsInSD

In order to keep costs as low as possible, M4PS began investigating the viability of open source tools. Open source platforms offer advantages and disadvantages over traditional commercial products.

Advantages include:

1. Minimal cost to launch
2. Feature rich
3. Flexible customizations
4. High extensibility

Disadvantages include:

1. Lack of documentation
2. No formal support

Once a viable open source tool had been identified, a hosting model had to be determined. Without internal infrastructure, M4PS engaged Amazon Web Services (AWS) to determine the viability of a cloud-hosted solution. The determination was made that a Cloud Service Provider (CSP) could provide a higher level of security, automation, and scalability at a significantly lower cost than building from scratch. AWS Solution Architects proposed several tools to assist with the administration of the mobile app and provided support for estimating costs to determine financial requirements.

The last component was the technical resources to customize and support the app. DHS teamed up M4PS with Oasys International Corporation. Oasys is contracted by DHS to develop low/no cost Identity, Credential, and Access Management (ICAM) solutions for public safety. They have strong expertise in open source, reverse engineering, and software development. Not only would the ICAM tools they are building support the deployment of the public safety collaboration app, but the POC offered a unique opportunity for field testing some of the technologies that they have been developing for S&T.

M4PS and Oasys began testing and customization activities. The first two field deployments of the open source app were conducted for LAPD Officer Juan Diaz' Funeral on August 12, 2019 followed by CicLAvia on August 18, 2019. Both events were successful and validated the feasibility of the open source platform for public safety. The LAPD Funeral Mobility AAR[5] and CicLAvia Mobility AAR[6] outline the planning, deployment, and lessons learned from both operations.

Now that the PS collaboration app has been successfully field tested, the team is working on product customizations including a regional user directory, an attribute-based access control (ABAC) model to support federated ICAM, and various public-safety specific feature enhancements. Additional deployments will be necessary to analyze usage patterns and computing resources to validate costs and the feasibility of a model to deliver a no cost solution for secure, scalable public safety collaboration.

[5] https://tinyurl.com/DiazMobilityAAR
[6] https://tinyurl.com/CicLAviaAAR

Conclusion

While the lessons learned during year 1 of the LA MAC program were in many ways unanticipated, the program was successful in:

1. Demonstrating the operational value of mobile broadband technologies for public safety
2. Validating the importance of regional coordination for interoperable mobility adoption
3. Identifying critical obstacles for developing a sustainable, regional mobility framework

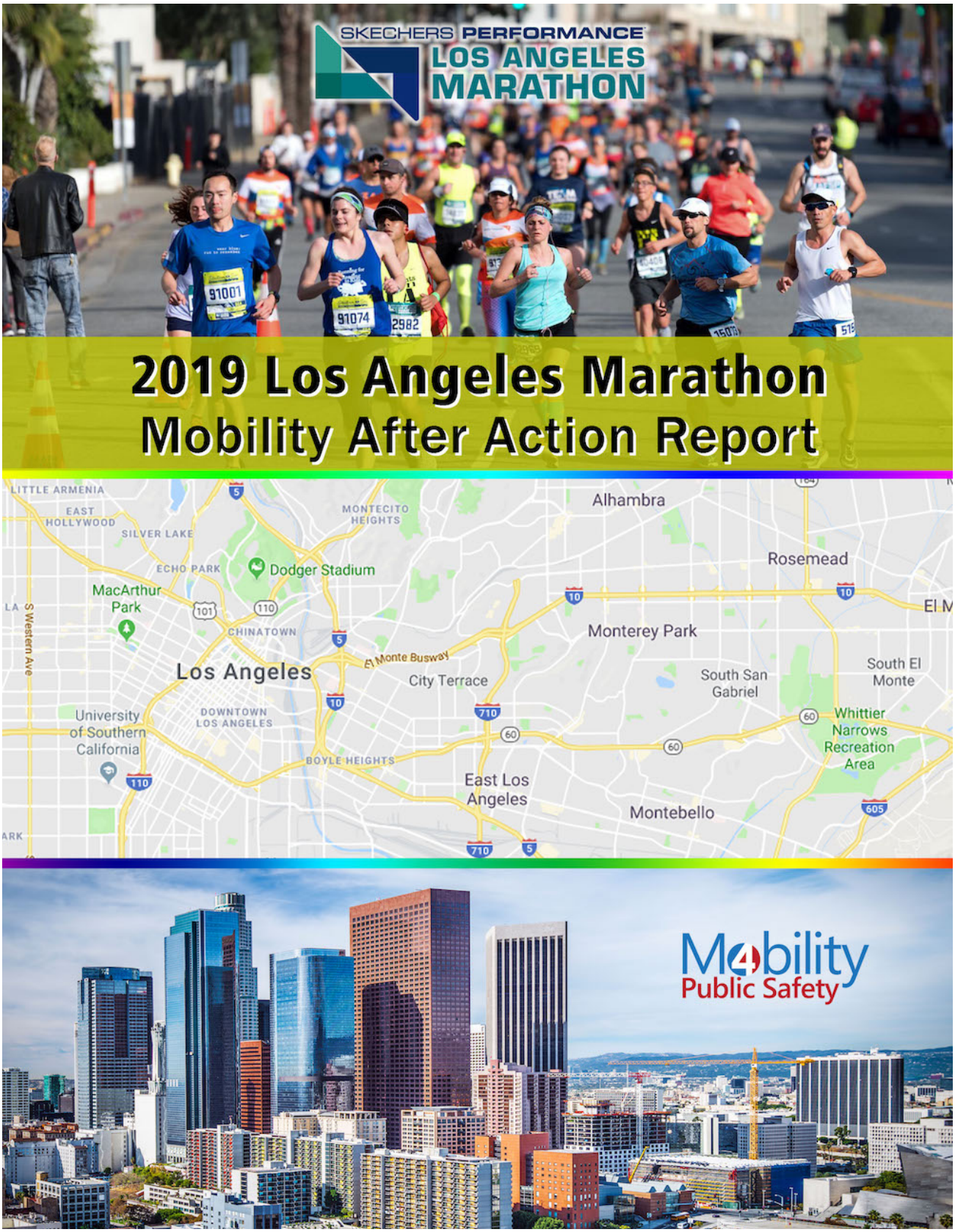
The relationship established with HSAC@SPP was key for delivering successful mobility deployments for a variety of pre-planned events and proving the need for non-traditional funding models for delivering technology innovation to first responders.

The “artificial” circumstances utilized by the HCLTE program in Harris County/Houston and the MAC in LA demonstrate the potential for successfully achieving interoperable mobile data adoption to produce significant operational effectiveness. The historic interoperability problems in public safety are the natural result of the federated government structure in the United States. Voluntary coordination is difficult to build and sustain. Most successful multi-jurisdictional programs involve dedicated funding and/or legislative mandates. Without a regional governance body and sustainable funding, it may be difficult to maintain and expand these results.

At the time this report is being produced, it is unclear whether the LA MAC will receive additional funding. We hope that the activities during year 1 demonstrated the need for regional stakeholders to approach mobility adoption in a coordinated manner to avoid the use of fragmented, non-interoperable systems.

It has been a true honor to work with the various public safety organizations in the LA region. The leadership and cooperation across departments, disciplines and jurisdictions was critical to achieving the operational results for proving the value of public safety mobility solutions. We appreciate the involvement of all departments and individuals who participated in the MAC for your contributions in advancing the mission of interoperable mobility adoption in the LA region and providing valuable lessons learned to advance this mission throughout the country.

Appendix A: 2019 LA Marathon Mobility AAR



Appendix B: 2019 LA Pride Mobility AAR

Appendix C: LAPD Officer Diaz Funeral Mobility AAR

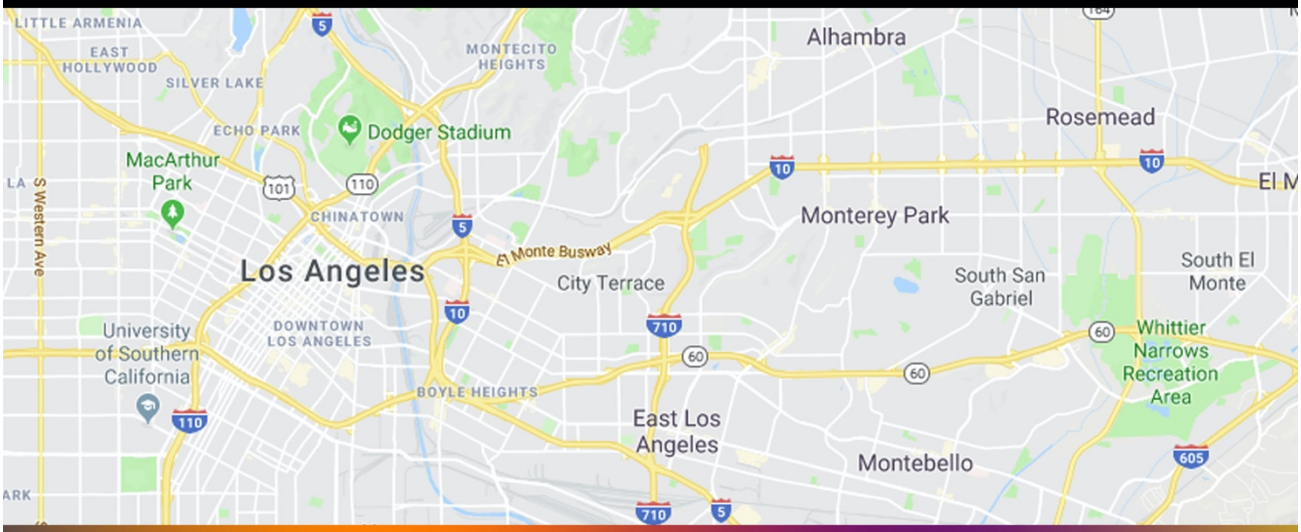
POLICE OFFICER

JUAN JOSE DIAZ

END OF WATCH

July 27, 2019

Mobility After Action Report



Appendix D: 2019 CivLAvia Mobility AAR