



Memorandum

TO: PUBLIC SAFETY, FINANCE AND
STRATEGIC SUPPORT COMMITTEE

FROM: Dolan Beckel

SUBJECT: SEE BELOW

DATE: February 14, 2019

Approved

Date

2-14-19

SUBJECT: INNOVATION ROADMAP: SAFE CITY STRATEGY STATUS REPORT

RECOMMENDATION

- (1) Accept the status report on the Innovation Roadmap: Safe City Strategy regarding the applied use of technology and technology improvement opportunities within the Police Department, Fire Department, and the City Manager's Office of Emergency Management.
- (2) Defer the demonstration of business intelligence tools to a date to be specified in the Public Safety Finance and Strategic Support Committee workplan for January-June 2020.

BACKGROUND

On March 29, 2016, the City Council adopted the Smart City Vision to work towards making San José the most innovative city in the United States by 2020. One focus of the Smart City Vision plan is to broaden the use of data analytics to improve public safety. The Police Department, the Fire Department, and the City Manager's Office of Emergency Management have since been working on a strategy that is focused on:

- (1) broadening the use of data and data analytics for informed decision making; and
- (2) utilizing digital platforms to improve public safety and emergency response.

In addition to various ongoing departmental initiatives, one-time funding of \$150,000 has been allocated to develop an overarching Safe City Strategy. The City Manager's Office of Civic Innovation will be on-boarding a FUSE Fellow in April 2019 to lead this work, and will collaborate with the Police Department, the Fire Department, and the City Manager's Office of Emergency Management to develop this strategy and execution roadmap.

Any business intelligence functions available for demonstration have already been demonstrated to the Committee in a previous meeting. The recommendation to defer the business intelligence tools demonstration to the January-June 2020 workplan allows the departments more time to develop new functions for demonstration.

ANALYSIS

The following sections provide information regarding various initiatives, providing details about successful projects and lessons learned that each department has completed or is in-progress. An update on the development of an overall Safe City Strategy roadmap for future initiatives is also included. During discussion of this topic at the March 2018 Public Safety, Finance and Strategic Support Committee (PSFSS) meeting, the Committee directed staff to bring back a business intelligence tools demonstration. This demonstration is recommended for deferral to a date specified in the PSFSS Committee January-June 2020 workplan to allow the departments more time to develop new functions for demonstration.

Data Analytics – (Police Department)

Status: Ongoing Usage of Three of Four Analytical Modules

The Crime and Mobile Predictive Analytics Software Suite is a solution that gathers and analyzes crime statistics, produces reports, develops intelligence, identifies criminal trends (including emerging problems), and includes crime mapping technology and a module that patrol officers would use to predict and or forecast criminal activity.

Working closely with the product vendor, the following features and functionalities of three of the four analytical modules have been implemented:

(1) Omega CrimeView Dashboard

The Omega dashboard is a web-based geographic information and crime analysis tool for law enforcement personnel to view Citywide crime trends. It provides an interactive display of police and crime data with both spatial and temporal (data over a time line) visualizations. The dashboard is organized into multiple panel displays of customizable crime data (e.g. violent crime, property crime).

- a. Sworn staff can immediately access Computer Aided Dispatch (CAD) and Reported Incident data. Several time intensive manual reports have now been fully automated and are readily accessible. Examples include Parolees, Time of Day and Day of Week Analyses, and Sex Registrants reports.
- b. Sworn staff now have access to data and analytics that allow Crime Analysis analysts time to be proactive and assist the Bureau of Investigations by identifying suspects and providing leads on cases.
- c. The solution is actively being used by Captains in the Bureau of Field Operations. Captains can view immediate data (critical feature) and identify crime trends.

Captains have set up Division-specific alerts for crime trends which they disseminate to their Lieutenants to assign resources accordingly. It is also used to prepare data to answer questions at weekly Community Meetings.

- d. The 2019 goal is to have the Bureau of Investigations detectives create hotspots to relay trends to patrol staff.

(2) Crimemapping

This module provides the public with the ability to access and view crime activity within their neighborhoods using the Records Management System data (data does not contain personal information and addresses are by block). The public can query up to 180 days of rolling data and share the map results.

- a. Public has also access to several analytical components with crime type filters:
 - i. Crime Summary – identify which is the most prevalent reported crime in the area; and
 - ii. Day of Week Summary – identify most frequent day of week of reported crime types.
- b. One of the key features of this solution is that the public can set up email alerts for new reported crime types or sex offenders in an area by radius.

(3) CrimeView Advanced Reporting Module

This module is a business intelligence tool used to query the computer aided dispatch (CAD) data and display analytical reports. It is utilized by both sworn and civilian personnel.

- a. This module provides a minimum workable replacement for the previous Computer Aided Dispatch (CAD) data interface.
- b. Some issues with this module have been identified and are in the process of being worked by the vendor.

(4) Predictive Missions

The predictive policing module will provide patrol staff with an accessible resource to proactively predict and prevent crime, identify areas of high risk for proactive patrol, and deploy resources accordingly.

- a. While working on this module PD discovered several issues and the vendor was not able to provide a satisfactory resolution. These issues included:
 - i. Non-user-friendly interface;
 - ii. No GPS component and officers cannot view their car location based on the forecasted mission areas nor time spent in mission area (treatment), thereby limiting supervisors' ability to gauge officer accountability;
 - iii. No measurable features to gauge usage and effectiveness; and

- iv. No exportable report function in either .csv or .xml file format.
- b. The process of solution evaluation provided valuable insights into the functional requirements for predictive missions. The current plan is to go to RFP in March 2019 and select a new vendor for this component of the contract.

Central Emergency Vehicle Preemption – (Fire Department)

Status: Successful Implementation & “Go-Live” in October 2018

As directed by the City Council approved Mayor's March Budget Message for Fiscal Year 2016-2017, one-time funding of \$1.2 million was allocated to provide emergency vehicle preemption service at all signalized intersections that would help improve response times to fire and medical emergencies.

The City's Fire and Police Departments centrally manage emergency response resources through a Hexagon/ Intergraph Computer Aided Dispatch (I/CAD) System. The Department of Transportation (DOT) centrally manages traffic signal operations at 956 signalized intersections through its TransCore/ TransSuite Traffic Control System (TCS). The three City departments (DOT, PD and Fire) collaborated with the two system vendors, Hexagon and Transcore, to determine how these systems can be leveraged together to provide an integrated Centralized Emergency Vehicle Pre-emption (CEVP) system for the City of San Jose. A key component to making this project successful is the cooperation of all parties involved and having agreement on the proposed solution operations.

The CEVP eliminates the need for installing additional hardware infrastructure at the signalized intersection. The integrated CEVP system utilizes existing infrastructure and software systems to send the emergency vehicle preemption requests via the City owned communications network directly to the traffic signal controller at the intersection. The system leverages the City's existing infrastructure, from the current equipment and Automatic Vehicle Location (AVL) system available on Fire response units, to the existing Computer Aided Dispatch (CAD) system currently used by Fire and the Police Department, to the traffic signal control system, communications and signal controllers used in DOT.

The CEVP system took one year of planning and design, and an additional year to develop and deploy. “Go Live” citywide implementation began in October 2018. To date, 935 signalized intersections are on the new system. This deployment does not include the County managed intersections. An information memo on the deployment was released on September 28, 2018.¹

The total project cost to-date is \$963,000. A traditional solution would have cost over \$9 Million and with a much longer timeframe to deploy. The new approach allowed for a quick deployment of the CEVP solution at 10% of the cost of the traditional solution.

¹ <https://files.constantcontact.com/7a210436601/a26ce521-b2eb-4337-a0f6-9547680f3ddc.pdf>

The next phase of the CEVP program will focus on deploying the system to the last 12 remaining legacy intersections needing hardware upgrades, identifying opportunities to further improve CEVP performance including routing management and metrics tracking, and exploring way to implement the system on the County managed intersections. CEVP is heavily reliant on advanced traffic signal control capabilities and a robust communication network. Appropriate level of investment will be required in these areas to ensure system reliability and to support future system enhancements that are likely to require higher bandwidth and faster data processing capability.

Fire Station Alerting System - (Fire Department)

Status: Projected "Go-Live" in March 2019

On October 24, 2017, The City Council approved the purchase of an upgraded fire station alerting system. The upgraded station alerting system technology automates certain dispatching steps, resulting in reduced call processing times, thereby improving overall response time.

Currently, 9-1-1 calls are processed and then queued to have a dispatcher alert the Fire Station utilizing a radio to provide incident information and details initiating an emergency response from the Fire Companies. This type of dispatch alerting is processed sequentially dependent on the availability of a dispatcher. As the call volume increases, under the current workflow, there is an adverse impact on the Fire Station's ability for a timely response. The new Fire Station Alerting System interfaces seamlessly with the computer aided dispatch (CAD) system to fully automate the alerting process from the dispatch center to the fire stations. The dispatcher inputs the information into the CAD system and the Fire Station Alerting System converts the information from text-to-speech and simultaneously broadcasts incident information to the fire stations and responding units utilizing a computer-generated voice. In the new workflow, the time to alert the Companies of an incident is decreased, thereby improving response times.

Under a five-year agreement (Oct. 2017 – April 2024) with the vendor, US Digital Designs, the Fire Information Technology (Fire IT) team is working to deploy this solution. System Hardware was delivered in February 2018 and the Public Works Department began installation of all the station controllers in September 2018. Installation of the primary network was recently completed and Information Technology Department (ITD) is currently testing the redundant network availability to ensure 24/7 operations. After various testing phases are completed, the installation of the remaining network components and system configuration will be performed by Fire IT and the vendor. The current estimated System "Go Live" date is March 2019.

Mass Notification System – (Office of Emergency Management)

Status: Ongoing

One of the primary focus areas for City Manager's Office of Emergency Management (OEM) has been to increase the City's capability to alert and notify San José residents for emergency events. The City actively coordinates Alert, Notification, and Warning with the Santa Clara County Office of Emergency Services who sponsors the Alert Santa Clara County (Alert SCC) notification system. The system is a contracted service through Everbridge that provides similar services to jurisdictions across the nation.

OEM has been developing and enabling a multi-layered approach to emergency notifications and encouraging Opt-In of San José residents and allow notification language selection. There are typically four common methods that are being used for mass notifications:

(1) Wireless Emergency Alert (WEA)

WEA is an opt-out service and is used when wireless phone carriers broadcast to cellphones in a specified geographic area on behalf of government agencies to send consumers an alert with a distinctive sound. An example of the WEA service is the broadcast of an Amber Alert. The importance of Wireless Emergency Alerts (WEA) has increased significantly. 53.9% of households in the U.S. are now using only wireless telephones instead of landlines. WEA messages can reach approximately 75% of the U.S. population within minutes.

(2) Reverse 911

This system allows 911 operators to call the public. However, it does not include wireless telephones and most Voice Over IP (VOIP) telephones.

(3) AlertSCC

An opt-in system that is like reverse 911 that can send alerts to landline telephones, mobile phones, email, and text message. Multiple languages are supported (English, Spanish and Vietnamese).

(4) Nixle

An anonymous opt-in system using zip codes that many county agencies, including Sonoma and Santa Clara use to contact residents via text and email alerts. It is an easy and anonymous service and since 2017, its adoption in Santa Clara County has increased by 14%.

OEM has made the following progress with Mass Notification Systems since the last update:

- Hired 1 full-time Alert & Warning Coordinator;
- Utilized the Alert Santa Clara County (AlertSCC) and Integrated Public Alert and Warning System (IPAWS) for 6 life-safety instances;
- Increased the opt-in by 77% since 2017 for City of San José AlertSCC, with a language choice of English, Spanish, & Vietnamese notifications; and
- Conducted 138 monthly tests and exercise notifications made Senior Public Safety Dispatchers and OEM Staff.

OEM also worked with San José State University (SJSU) Research Foundation on a study to understand evolving trends titled “Mass Warning Study for the City of San José”. The purpose of the study was to identify the top 3-5 global most effective and integrated mass warning systems that can provide an emergency alert and messaging to 90% of the population within 10 minutes of notification initiation. In addition to general system recommendations, the research team was tasked with providing recommendations for addressing six disaster scenarios that might require emergency notification, including the Anderson Dam failing at full capacity, a no-notice train derailment in central San Jose, a gradual onset severe weather event with expected flooding, a

delayed onset and no-notice biological terrorism incident, a severe earthquake, and a complex coordinated terrorist attack.

This report has been developed based on both descriptions of current emergency response systems in major cities throughout the world and on academic research on existing and proposed future systems that increase the City's ability to notify most of the population in the least amount of time possible. Based on the analysis of the existing emergency response infrastructure and both existing and upcoming technologies, this report provides recommendations for improving the City's emergency response systems and procedures. These recommendations include:

This report has been developed based on both descriptions of current emergency response systems in major cities throughout the world and on academic research on existing and proposed future systems that increase the City's ability to notify most of the population in the least amount of time possible. Based on the analysis of the existing emergency response infrastructure and both existing and upcoming technologies, this report provides recommendations for improving the City's emergency response systems and procedures. These recommendations include the following, subject to availability of funds:

(1) Immediate improvements:

- a. Expand the fleet of available Long-Range Acoustic Devices (LRAD);
- b. Redevelop a siren infrastructure with comprehensive coverage of the city;
- c. Implement and test the recommended protocols for notification for the six researched scenarios with messages in multiple languages;
- d. Develop similar protocols for additional scenarios; and
- e. Increase public education and outreach efforts to ensure appropriate public response to potential emergencies.

(2) Long-term recommendations:

- a. Address several limitations in the current emergency response process including lack of population feedback and metrics for measuring the performance of notification systems, reliance on a series of person-to-person notifications for all response protocols, limited ability to reach non-English speaking/ reading populations, and the lack of real-time sensor data integration and public information sharing capabilities.

(3) Recommendation requiring coordinating with other Public Agencies:

- a. Develop agreements and technology integration with various agencies outside the purview of the City of San José, such as the Santa Clara Valley Water Authority (SCVWA);
- b. Invest in new technologies, such as advanced sensors, Internet of Things (IoT) computing devices, and cloud-based data analytics;

- c. Implement an integrated cloud-based smart emergency warning system that would be able to automatically respond to certain emergency scenarios coupled with a smart Web-based emergency dashboard and smart-phone application; and
- d. Leverage the integrated system to support both emergency responders and the public, providing appropriate information and functionality.

OEM will coordinate with City departments to develop a prioritized execution roadmap for implementing these recommendations.

Safe City Strategy (City Manager's Office of Civic Innovation)

Status: Initiating in April 2019

The Office of Civic Innovation plans to on-board a FUSE Fellow in April of 2019. This Fellow will work with the Police Department, the Fire Department, and the City Manager's Office of Emergency Management to understand challenges and inventory current departmental initiatives, gaps, and areas for improvement as they relate to use of data and technology. Working closely with departmental stakeholders, the Fellow will lead the development of a common Safe City vision, strategy, and an execution roadmap including "quick wins." Subsequently the FUSE Fellow will build change readiness and momentum for the Safe City vision through implementation of select initiatives on the roadmap.

The expected deliverables for the Safe City Strategy shall include, but not limited to:

- (1) **Landscape Assessment:** Develop a comprehensive analysis of current public safety systems and gaps. This will be accomplished through engaging with cross-departmental stakeholders to understand needs and any past obstacles to adopting a more data-driven approach. The FUSE Fellow will work with the Administration to develop an overall strategy for data use in public safety management that facilitates collaboration across emergency management departments and the wider city organization. This assessment shall include but is not limited to:
 - a. Police Department Fusion/ Data Collection Center;
 - b. Fire Department Data Warehouse/ Business Intelligence: Dashboard Monitoring Tools and utilization of data sets and performance metrics;
 - c. Office Emergency Management Public Broadcast;
 - d. Vision Zero Department of Transportation Intersection Safety Pilot;
 - e. Wireless Communication Infrastructure Disaster Resiliency; and
 - f. AT&T digital infrastructure audio and video sensors in select parks pilot (including privacy workshops).

(2) Execution Roadmap:

- a. Create and socialize an execution roadmap to implement the overall strategy for data use;
- b. Develop actionable items, and ground strategy in existing department-level processes; and
- c. Establish cost estimates, personnel requirements and timelines for all recommendations.

The Roadmap should take a ‘people, process, technology’ approach that accounts for future workforce and skills development needs.

(3) Stakeholder Engagement Map & Communication Plan:

- a. Build rapport with leadership in the Police Department, the Fire Department, and the City Manager’s Office of Emergency Management, and develop a Stakeholder Engagement Map to be utilized throughout the assessment and roadmap development process;
- b. Develop a comprehensive Communication Plan to communicate the value derived from leveraging technology to win and maintain support for project; and
- c. Engage respected external stakeholders as appropriate to help facilitate consensus and on-boarding across and within organizations.

(4) Pilot Initiatives Implementation:

- a. Identify and pursue easy to implement “quick wins,” to demonstrate value of project and engage city leadership; and
- b. Select initial projects with an eye towards facilitating culture change around data and technology.

It is understood that the key to successful implementation of pilot initiatives will be to fully operationalize the initiative which includes ensuring sustainability of the project within the existing organization.

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Subject: Innovation Roadmap: Safe City Strategy Status Report

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COORDINATION

This memorandum was coordinated with the Police Department, Fire Department, City Manager's Office of Emergency Management, City Manager's Budget Office, Department of Transportation and the City Attorney's Office.

/s/

Dolan Beckel, Director

City Manager's Office of Civic Innovation

For questions, please contact Dolan Beckel, Director, City Manager's Office of Civic Innovation, at (408) 535-8260.