Bay Area Regional Interoperable Communications Systems Authority (BayRICS)
Communications Capabilities Gaps Assessment

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INTRODUCTION

To date, Bay Area public safety agencies have made significant investments to improve mission critical voice communications (Land Mobile Radio or LMR) interoperability across agencies. The primary investment for most agencies has been the upgrade of public safety LMR systems to the Project 25 (P25) digital standard. Upgrades have been largely successful, with five of seven agency groups having completed or nearly completed full system upgrades. Two additional agencies plan to have upgrades completed in 2018. Other Bay Area operational areas (OAs) are considering whether to upgrade to P25, or remain with legacy radio systems.

In 2014, BayRICS established the P25 Operators Advisory Group (P25 Operators) with the goal of developing coordinated procedures for ensuring interoperability among the seven systems. P25 Operators have developed coordinated procedures for ensuring interoperability among systems, including an updated regional Fleetmap and system key sharing guidelines. The Operators conducted tests of the technical performance of the networks in regional exercises in 2015 and 2016. These tests validated technical performance, but also identified operational issues that still need to be addressed.

In 2016, the P25 Operators embarked on a process to identify existing capability gaps and develop recommendations to close those gaps. This Assessment describes the findings and recommendations of that process.

BACKGROUND

In May 2013, BayRICS published an "Interoperable Voice Communications Assessment," which described, at a high level, the current status of Bay Area interoperable voice communications capabilities and recommended specific short-term actions and long-term planning activities to enhance the region's voice capabilities.[1] Based on the recommendations of the Assessment, BayRICS established the P25 Operators Advisory Group in 2014, with the goal of developing coordinated procedures for ensuring interoperability among the seven systems.

In 2015, the P25 Operators coordinated a series of tests during Urban Shield Yellow Command to (1) demonstrate the interoperability capabilities of these advanced radio systems; (2) verify the region's radio programming procedures; (3) validate the channel and talk group allocations established in the Bay Area's regional Fleetmap; and (4) test the extent of overlapping coverage areas of these systems.[2] Building on the 2015 test results, a

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[1] Available at http://www.bayrics.net/uploads/1/2/4/6/12466172/bayrics_interoperable_voice_communications_report_5-9-13.pdf.

[2] Available at http://www.bayrics.net/uploads/1/2/4/6/12466172/2015_interop_radio_exercise_final_report_v1_11-17-15__1___1_.pdf.

second series of tests were conducted on September 8, 2016 during the 2016 Urban Shield Yellow Command Exercise.[3]

Both exercises were limited to technical performance tests (not operational field testing), designed to set a baseline for future operational exercises incorporating these advanced technical capabilities. Because tests were technical in nature, as opposed to the operational and functional activities making up the bulk of the Yellow Command exercise, radio exercises were conducted in parallel to the Yellow Command exercise, but executed separately.

Although the tests demonstrated that considerable progress has been made in the deployment and technical programming of the new regional P25 systems, the 2016 tests underscored several operational capability gaps and training/exercise needs for the region. For example, operational issues were reported that prevented the completion of a significant number of calls, primarily due to inexperienced radio operators lacking necessary training. These calls were partially completed and acknowledged by other system users.

In the 2016 exercise after-action report, BayRICS recommended that the Bay Area consider developing a plan to identify and address these gaps and to allocate future regional UASI grant funding to develop training and exercise programs to ensure that personnel are adequately trained and knowledgeable in using the new technology.

In November 2016, the P25 Operators launched a process to identify and recommend solutions to the gaps identified in the after-action report.

REVIEW CRITERIA AND PROCESS

The P25 Operators determined that the best approach to would be to dissect the 2015 and 2016 test results and identify responsive actions targeted toward improving the responses of future training exercises. Beginning in November 2016, the P25 Operators held monthly meetings, open to any interested party, to review the test results, technical, programming and operational deficiencies identified in the tests, develop a specific list of interoperable capabilities gaps, and propose recommendations to close those gaps. P25 operators also considered the best ways to encourage participation from surrounding regional agencies that have not adopted P25 technology, and best practices for allocating available grant funding to address gaps.

The following findings and recommendations represent the results of this process.

INTEROPERABLE CAPABILITIES GAPS

The P25 Operators identified the following specific areas for improvement:

1. Regional interoperability policies, guidelines, system information, and coverage maps are not collected in a single document or location, such as a Regional Tactical Interoperable Communications Plan (TICP).
2. Radio programming procedures and policies have been established, but are not consistently followed by all agencies.
3. Incident commanders and dispatchers do not have a consistent understanding of the proper use of regional mutual aid talkgroups.

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[3] Available at http://www.bayrics.net/uploads/1/2/4/6/12466172/2016_yc_interop_radio_final_reort_final.pdf.

4. Regional exercises do not normally include use of regional mutual aid talkgroups. The limited exercises that have been conducted involve technical elements, and have not involved operational situations or personnel.
5. The P25 Operators Advisory Group has been successful in facilitating interoperability between BayRICS agencies. However, better coordination and planning is needed with surrounding regional agencies, especially agencies that have not adopted P25 standards.
6. Better coordination of resources and planning is needed with the State of California through the State-Wide Interoperability Coordinator (SWIC), regional planning areas, and CalOES.
7. Recent technology innovations and functions are not being utilized consistently by all agencies, creating interoperability gaps between agencies using advanced functionality and agencies without this functionality.

RECOMMENDATIONS

The P25 Operators developed the following list of near-term and long-term recommendations:

1. **Enhance Access to Regional Communications Resources**
   - Update Regional Tactical Interoperable Communications Plan (TICP)
     - o Identify funding opportunities for development of TICP (homeland security grants, technical assistance grants, etc.)
     - o Include regional Fleetmap, programming and system key sharing guidelines in the TICP
   - Update system status and planning objectives for all operational areas
   - Share coverage maps of all systems

2. **Consistent and Uniform Radio Programming**
   - Ensure that radios to be used for mutual aid response are identified and programmed properly with regional interoperable talk groups
   - Investigate need and options for procurement of a Radio Management Server license
   - Develop and implement standard processes for programming mutual aid radios with correct regional channels/talk groups

3. **Training & Exercise**
   - Work with Regional Training Center (RTC) to identify and provide end user training for mutual aid channels/talkgroups available on radios
   - Work with Regional Training Center (RTC) to identify and provide training for dispatchers (O3 Solutions)
   - Work with Regional Training Center (RTC) to identify and provide training for Incident Commanders so they know when to use mutual aid talk groups in live incidents.
   - Consider a "Train the Trainer" program for agencies/OAs to meet training needs
   - Develop other tools like talk group "cheat sheets."
   - Design and conduct regional training exercises, including a system failure scenario

4. **Encourage all Bay Area Agencies to participate in P25 Operators meetings and regional planning processes.**
   - Expand scope of P25 Operators Advisory Group and rename group to "Radio Operators Advisory Group"
   - Assess current interoperable communications capabilities between OAs without P25 upgrades—what additional steps need to be taken?

5. **Coordination with State and Regional Partner Agencies**
   - Collaborate with California state agencies/Statewide Interoperability Coordinator (SWIC) under CalOES:
     o Invite SWIC and staff to speak to group on a regular basis about State resources
     o Identify and develop plan to identify and utilize State resources
     o Develop relationships with radio communications stakeholders in surrounding areas (Cap-Bay Planning Group, etc.)

6. **New Technology**
   - Assess current use of new technology by OAs—what additional steps need to be taken?
     o Example: Need for a regional SECURE encrypted talk group: Is there a solution that works for everyone?
   - Identify emerging technology solutions and impact or benefit on public safety.
     o Example: Consider the impact of "LMR-to-LTE" integration
     o Example: Internet of Things for Public Safety

IMMEDIATE NEXT STEPS

1. P25 Operators recommend that the "BayRICS P25 Advisory Group" be renamed the "BayRICS Regional Radio Advisory Group (BRRAG)" and that all regional agencies be encouraged to assign representatives to attend meeting of the group.

2. Operators recommend that existing BayRICS funding (UASI 2017) be allocated for the following purposes:
   a. Develop an updated Regional Tactical Interoperable Communications Plan (TICP).
   b. Implement a training and exercise framework for users, incident commanders and dispatchers, with initial focus on a "train the trainer" course available to agencies (through the RTC).

3. Operators will continue meet monthly to discuss radio programming, equipment standards and technical advances, and will develop additional guidelines as deemed necessary to help bridge the gaps identified in this report.

4. The Operators recommend that BayRICS Authority work with the UASI to conduct annual or bi-annual assessments designed to chart the progress made toward eliminating these gaps and identifying new challenges as they arise.