

# TRAINING

## INTRODUCTION

Training, while too often the victim of budget cuts and realignments, is absolutely key in the success or failure of any public safety operation. The ability to maintain quality services for both the public and emergency responders is dependent upon the ability to provide both initial and ongoing training to PSAP personnel. Without adequate training, at the operational level even the best technical solution will fail. Training is fundamental to the success of any public safety operation, and PSAPs are no exception. 9-1-1 authorities and relevant decision-makers should prioritize funding for the initial and ongoing training that PSTs deserve, as an investment that is necessary to provide quality services to the public and emergency responders.

The training needs for personnel in a broadband PSAP environment include what's currently needed for PSTs as well as what's needed to develop and maintain skills in an environment with new capabilities and rapidly evolving technology. The capacity for broadband technology to be ubiquitous and intuitive to the user can be leveraged to create model training programs for states while preserving flexibility to meet particular requirements and governance approaches. The varying sizes of PSAPs will be a differentiating factor in training approaches. However, in an IP-connected, interoperable environment powered by broadband technology, training should include sufficient commonality because, particularly in mutual aid situations, PSAPs must be prepared to understand and appropriately respond to the expectations of the public and emergency responders using widely deployed broadband technologies.

Current training standards and best practices would benefit from a number of specific language

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changes (for example, the term “call for service” is far too limiting in a broadband environment), and new definitions (such as for “broadband,” “NG9-1-1”). Further, public safety can leverage lessons learned from technologies already in use, such as mobile apps and social media platforms deployed at universities and enterprise environments. Ongoing training to maintain competence will be even more important in a rapidly evolving broadband environment accompanied by increased stress due to processing more information and exposure to live video from incidents.

## THE TRAINING ROLE

To set the stage for a discussion of the training-related impacts of broadband technology, consider the potential changes for PSTs of the future. The scenarios described in the Executive Summary concerning the response to a multi-vehicle traffic crash today compared to the response in a fully broadband-capable public safety environment can help illustrate the role of training.

Without broadband, PSTs:

- Receive calls of an automobile accident with entrapment and question the callers about the



location, number and type of vehicles involved, number of patients, and injuries

- Dispatch field responders according to their SOPs
- Perform emergency medical dispatch to assist with patient care before field responders arrive
- Once field responders are on scene, assist with communications and dispatch additional resources as requested

With broadband:

- PSTs receive real-time video from the scene from members of the public and an agency-operated UAV
- PSTs can see a vehicle placard and identify potential HAZMAT concerns
- When the PSAP is overwhelmed by callers from the scene, PSTs transfer calls with all related information to a partner agency for assistance with call processing and emergency medical dispatch
- Biometric devices on victims transmit data such as pulse and medical history along with the 9-1-1 call
- Video, corroborated by biometric data, indicates that one of the patients is a Priority 2 trauma, leading the PSTs to dispatch a medevac helicopter and additional fire/rescue units to establish a landing zone

- PSTs can share video and other data with field responders to provide information before they reach the scene and improve situational awareness throughout the incident

To fully take advantage of these advanced capabilities for the benefit of public safety, PSTs will need additional training. For example:

- How to incorporate live video, whether from a caller or an agency-operated source, into call processing and dispatching
- How to manage PST support from a partner agency that may have different capabilities
- How to incorporate more detailed patient information into an assessment as part of emergency medical dispatch
- How to manage the increased stress that will come from exposure to images and increased operational involvement that have traditionally been limited to field responders

Consistent with the list of additional training considerations for broadband-capable PSAPs provided above, this report offers several considerations for PSAPs, PSTs, and training program developers as part of their planning for the adoption of broadband technology.

## FINDINGS

### Training for Broadband

The impacts to training requirements from broadband technology will be varied. Some technology used at the next generation PSAPs might not require significant training if it is similar to technology already in use by consumers (e.g., social media interfaces). Other technologies will be natural extensions of tools already available to PSAPs. For example, real-time video feeds and 3D location tracking of field responders will provide much more situational awareness to PSAP personnel than what's afforded by automatic vehicle location systems used today to track the location of public safety vehicles.

The information made available to PSTs by broadband will present an opportunity for PSTs to play an enhanced role during emergency operations, especially for incidents in which this real-time situational awareness information can be lifesaving, such as active shooter responses, and firefighter MAYDAYs. The nature of a PST's role will change dramatically. Whereas today, a PST might be the first to notice a MAYDAY or a critical background noise that indicates first responders are in danger, having more sophisticated situational awareness tools will further erode the physical separation from the scene. PSTs will require significant additional training with advanced technologies to prepare for a greater role in incident operations.

Lessons learned from existing technology deployments will assist with anticipating the impacts of broadband technology and developing training programs. Even today, a variety of mobile apps that enable broadband communications are being used in enterprise environments and universities for public safety functions. For example, apps can create a video link with real-time location tracking between students and campus police officers as part of a virtual escort. Students know to rely on traditional 9-1-1 for emergencies but can pioneer apps that have advanced features for non-emergency public safety needs. At the same time, lessons learned from these environments can help shape the training for use of similar technologies inside the PSAP.



Public safety professionals know that they cannot be trained for every scenario they will encounter so the philosophy has been to establish a core skillset that will allow personnel to effectively respond to any situation. The unpredictability inherent in emergency operations will be further complicated by the fact that PSTs will be impacted by technology they may not have had exposure to. Both first responders and the general public alike will have tools at their disposal, such as mobile apps, or access to intelligent databases, that they will use during emergencies and will look to rely upon this information as they contact PSTs. For example, a consumer-facing mobile app might keep track of AED locations and provide instructions for administering CPR. During a cardiac arrest call, PSTs might then need to determine whether to direct a caller to an AED (based on the caller's report of the app's suggestion) that may conflict with the agency's list of available AEDs.

There will be continuous innovation producing technologies that PSAPs cannot anticipate. Thus, adaptability, already a key trait of successful PSTs, will be even more important as broadband technologies change emergency communications because the technology may be developed and introduced more rapidly than training programs can keep up with.

For a broadband environment, PSTs will need to be trained in new subject areas. PSTs will need at least a basic level of training in cybersecurity awareness and hygiene because employees at every level impact cyber vulnerabilities and mitigation. Further, training should provide a broad knowledge of digital, IT, and broadband-based technologies that may impact public safety communications, some of which can be patterned off of training provided at IT departments, and emergency management, real-time crime, 3-1-1, and fusion centers.

### Training to Manage Increased Stress

Training PSTs to effectively recognize and manage stress in themselves and their colleagues is important today and will become even more important with broadband technologies. The capacity for broadband to create a more immersive experience for PSTs with increased situational awareness and exposure to images and live video from incidents, as well as new opportunities for monitoring field responders' safety, can all lead to a more effective response but also serve as additional sources of stress.

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Training programs should therefore include an awareness of basic concepts related to stress, and the following strategies should be considered (some of which are already part of stress management programs).

### Train Personnel to Use Active Coping as a Stress Management Tool

Active efforts to resolve problems or reduce distress yield better outcomes for workers' psychological health. Active coping includes a broad range of activities such as problem-solving, exercise, diet, and seeking social support. The key is that the person takes action rather than avoiding, denying, or passively accepting the troublesome situation. If PSTs can be trained to critically appraise a video call for specific information (presence of a weapon or other safety hazards, for example), this may offer them a protective sense of having taken control, as well as gleaned practical information to relay to responders. Additionally, research has shown that the impacts of viewing traumatic material can be lessened with certain mitigation interventions.<sup>90</sup> For example, distracting tasks (such as playing a video game) and cognitive reappraisal<sup>91</sup> have been shown to reduce intrusive memories and other traumatic effects.

### Conduct Team-Oriented Training

The social context in which a potentially traumatic event unfolds and is processed plays an important role in a PST's psychological health. In general, social support and interpersonal variables are important factors for the impacts of stress. Leaders perform a key role in supporting resilience training, creating a culture of support, and implementing stress exposure mitigation policies. But, training the entire agency on what to do and what not to do when communicating with each other after traumatic events will be an important part of a stress-management program.

### Train Personnel to Provide Peer Support

Peer support teams should be trained, at a minimum, to identify stress and provide or assist with basic peer counseling. Whenever possible, peer supporters should be professionals with broad public safety experience to offer a comprehensive perspective, and it could be beneficial to include representatives from other public safety agencies to offer support from someone other than immediate coworkers. Teams should partner with a licensed mental health professional to provide adequate training of the team and serve as an ongoing resource. Peer supporters should be familiar with local counseling resources.



Training lessons could also be learned from other sectors that already employ training programs focused on stress management, particularly involving trauma exposure (such as disaster response teams, military). Further, the impact to PSAP personnel of exposure to significant data and imagery would likely benefit from additional, focused research.

### **Training Differences Across PSAPs**

Variation in PSAP capabilities and training is often attributed to differences in PSAP size. However, the size of a particular PSAP is not necessarily dispositive of the type of training required. While some impacts will vary by size alone, factors such as funding, age differences across the workforce, and general availability of resources will be more useful predictors.

Broadband technology, by raising the ceiling of what's possible, will result in a wide disparity of technologies across PSAPs, leaving some with more advanced capabilities than others. At the same time, it will increase connectivity between PSAPs and therefore lead to more collaboration between agencies with different training levels and capabilities. Training for all PSAPs should

thus include a baseline commonality because, particularly in mutual aid situations, PSAPs must be prepared to understand and appropriately respond to the expectations of the public and emergency responders using disparate technologies. This might mean that personnel in PSAPs with relatively more technological resources are trained to use their agency's tools, as well as the tools available to any agency they might interact with that uses less sophisticated tools.

For example, suppose firefighters at Agency A have a mobile app that can automatically retrieve hazardous material information from a placard and immediately relay the pertinent information to the PSAP and to the mobile data computers of other units via wireless broadband. Firefighters from Agency B provide mutual aid, but lack these particular broadband tools. PSTs at Agency A, having been trained to communicate effectively for a response that uses traditional resources, use basic voice communication and a paper copy of the Emergency Response Guidebook to coordinate with firefighters from Agency B.

This example also introduces a related training need - to maintain proficiency with legacy technology even as broadband enables the use of more

sophisticated tools. Over-reliance upon sophisticated technology can lead to serious problems if these technologies fail and PSTs are no longer proficient with legacy backups.

### **Training Regardless of Resource Limitations**

PSAPs with more training resources are more likely to manage the related impacts of broadband successfully. For example, assistance from IT departments, in-house instructors and classrooms, and staffing flexibility make training on new technology easier. The following training strategies may be useful to PSAPs regardless of resource availability.

#### **Address Training Requirements in RFPs**

When procuring broadband technology from various vendors, PSAPs should consider addressing training needs in their RFPs. Sample RFP language is included in Appendix 6 for a variety of options for user and administrator training.

#### **Resource Sharing**

All agencies, particularly smaller ones and agencies with strained budgets, may want to consider sharing training costs with the other agencies in their region. Those agencies using the same vendors/technology may be willing to assist with training employees of a neighboring agency, and even without using the same vendors/technology there could be a benefit to training on shared concepts. The benefits of such a collaborative strategy could be compounded by coordinating technology enhancements at a regional level.

#### **Budget for Training Beyond the Scope of Anticipated Upgrades**

As PSAPs adopt standards-based broadband technologies, tools may be enhanced at a rapid pace that surpasses traditional PSAP upgrade cycles. PSAPs will need to look ahead and plan for additional training expenses to ensure staff maintains competence without being limited to advances that are part of a traditional procurement cycle.

#### **Skill-Focused Trainer Selection**

Rather than looking to supervisors or training coordinators as the exclusive options for training, any staff with an aptitude for embracing and understanding new technology should be considered. This may be especially helpful as age-related differences in comfort with technology increases with the introduction of broadband and more proficient but junior staff are better-suited to provide or at least assist with training.

#### **Updating Existing and Creating New Training Standards**

An important factor in improving training for broadband-capable PSAPs is the ability of training programs to reflect the characteristics of the fast-paced and ever-evolving nature of broadband technology. Several current consensus-based standards could benefit from modification in order to adapt to a broadband environment. This includes revising commonly used standards language such as “calls for service” to include text, video, audio, or photographic messages, and the need for new and consistent definitions for major new terms such as “broadband” and “NG9-1-1.”<sup>92</sup>

As noted above, new training programs will be needed for PSTs in areas such as cybersecurity and digital, broadband, and IT. Training models and strategies will also need to continually adapt, taking into account generational differences of PSTs in the workforce. Consider, for example, a situational awareness app that provides live video feeds, real-time location tracking, and biometric data from field responders to the PSAP. Today’s newest PSTs may have grown up with smartphones, tablets, gaming platforms, intuitive touch-screens, and high-speed technology, accompanied by a culture of little need for, and intolerance of, extensive training. Therefore, what’s intuitive to some personnel may not be intuitive to others. This again points to the need for public safety to leverage technology used in the commercial sector to benefit from the intuitive approach required by the consumer market. The capacity for broadband technology to be widespread and intuitive to consumers can be leveraged to create model training programs for PSTs while preserving flexibility to meet requirements specific to varying workforce compositions.

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Existing consensus-based training standards need to be updated to reflect the expanded scope and flexible terminology of a broadband environment. New training standards will be needed to address needs for general aspects of broadband technology, as well as target differences among the workforce in terms of the level of intuition with emerging technologies.

### **Training New Stakeholders**

Outside of the emergency response community, educating other constituencies including IT departments, app developers and other innovators, the general public, and elected and appointed officials would benefit PSTs and PSAPs.



### **Training IT Departments**

When IT departments support the broadband-enabled PSAP, whether for training, technology deployments, or ensuring continued performance, it would be helpful for IT professionals to have a basic understanding of the emergency response structure. Understanding the roles and responsibilities of public safety communications professionals will improve IT personnel's communications with PSTs and overall approach to carrying out their complementary duties.

### **Training App Developers and Other Innovators**

The broadband ecosystem makes it possible for a much wider range of innovators to develop truly helpful solutions for PSTs and PSAPs. The more familiar they are with the particular requirements and limitations of an emergency response center and public safety operations, the better able they will be to produce intuitive, effective, and efficient products and services.

### **Educating the General Public and Policymakers**

There is an existing and growing divide between public expectations and the reality of today's PSAPs in terms of technology adoption and availability. As time goes by, this gap will only lead to more confusion on the part of the general public and government officials responsible for enacting laws and regulations and providing resources and funding impacting PSAPs. The better educated the general public is about the capabilities of the 9-1-1 system, the safer they will be, and the more efficient PSTs can be in addressing their emergency response needs. Similarly, decision-makers at all levels of government would benefit from appreciating limitations that exist at PSAPs and thus the resources needed for PSAPs to meet public expectations and keep the community as safe as possible. This applies to legacy, transitional, and fully broadband-enabled stages. ■

## RECOMMENDATIONS: TRAINING

### Increased Situational Awareness

Training programs should account for the significant increase in situational awareness that new technologies will afford PSTs.

Training developers should leverage university and enterprise experiences with safety-related technologies for a testing ground for enhanced features and lessons learned to inform training programs.

### Training on Cybersecurity

Agencies should consider adopting the training recommendations of [APCO's best practices guide](#) to implementing effective cybersecurity policies and procedures in PSAPs, "An Introduction to Cybersecurity: A guide for PSAPs,"<sup>93</sup> as well as training standards, best practices, and courses from other sectors such as IT, emergency management, real-time crime centers, and fusion centers.<sup>94</sup>

### Stress Management Training

PSAPs should place greater emphasis on stress management training, especially in anticipation of increased sources of stress brought on as a result of broadband-based technologies. Stakeholders should also participate in research to identify lessons learned in other sectors, and evaluate PST stress and the efficacy of strategies and interventions to prevent or mitigate stress. This would help ensure that any new training standards and programs are informed by existing experience and empirically-driven.

### New Baseline Training and Non-Traditional Methods

A common baseline training should be adopted so that regardless of resource and training differences among PSAPs, PSTs are prepared to understand and appropriately respond to the expectations of the public and other emergency responders, particularly in mutual aid situations. Further, PSTs must be trained to use backup (legacy) tools in the event that advanced technologies fail.

In addition to traditional training programs, agencies of all sizes and resources can employ a number of options to educate their workforce, including addressing training requirements in RFPs, sharing resources with other PSAPs, budgeting for continued training needs, using skill-focused trainer selection, and taking advantage of no or low-cost media.

### Updated Training Standards

APCO will update its existing standards to reflect the new scope and terminology of a broadband environment and will develop new broadband-related training standards and programs as appropriate.

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## Notes

- 90 Holmes EA, James EL, Kilford EJ, Deerprouse C (2010) Key Steps in Developing a Cognitive Vaccine against Traumatic Flashbacks: Visuospatial Tetris versus Verbal Pub Quiz. PLoS ONE 5(11): e13706.
- 91 The meaning or appraisal of an event appears to play a large role in whether a potentially traumatic event will actually lead to traumatic effects. After traumatic calls, a PST's immediate appraisal of the incident may be "I am responsible for that person's death because I wasn't fast enough to save him," even if the PST performed perfectly. Instead, the PST can be trained to immediately reappraise that thought, to look at the event through a different lens, and replace the initial appraisal with a more accurate and adaptive one, such as "I wish I could have helped save him, but when I really think about it, I know I did my best." This strategy will help reduce or prevent traumatic effects.
- 92 For both general considerations and specific redline changes to existing standards, see Appendix 7.
- 93 <https://www.apcointl.org/doc/911-resources/669-introduction-to-cyber-security-a-guide-for-psaps/file.html>.
- 94 For a list of training courses related to Fusion Center and Emergency Operations Center Coordination, see Appendix 8.