

developed apps can enhance the 9-1-1 experience, critical issues must be addressed prior to implementing such tools.

Further, APCO remains very concerned that the marketing claims of some app developers are often misleading, uninformed, and even dangerous. For example, some apps misleadingly claim to provide a “precise location” to find callers when 9-1-1 can’t. Such hyperbolic descriptions confuse important issues and do a disservice to the hardworking professionals who have dedicated their careers to improving our nation’s emergency response system.

Here, APCO elaborates on its concerns and describes its ongoing efforts to ensure apps are as safe and effective as possible.

I. APCO Is Working to Ensure Public Safety Apps Are Safe and Effective

Recognizing that apps hold great potential, APCO has been working to ensure they are as effective and safe as possible. This work includes a variety of past and ongoing collaborations with public and private sector partners, including FirstNet, the Department of Homeland Security (DHS), the National Institute of Standards and Technology (NIST), the Public Safety Communications Research (PSCR) program, as well as a number of state and local government IT and public safety professionals.² APCO’s efforts have included:

- Establishing an Online Forum Focused on Public Safety Apps
 - In 2013, APCO launched the Application Community (www.AppComm.org), a forum for learning about existing apps and contributing ideas for new ones.³

² See, e.g., FirstNet, *APCO Enters Into Memorandum of Understanding with FirstNet Regarding Mobile Apps* (Aug. 21, 2013) available at <https://www.ntia.doc.gov/press-release/2013/apco-enters-memorandum-understanding-firstnet-regarding-mobile-apps>; APCO, *Partnering to Improve Public Safety Apps* (Nov. 2, 2015) available at <https://www.apcointl.org/tabletopx/partnering-to-improve-public-safety-apps/>; APCO, *APCO Partners with DHS to Advance Interoperability and Security of Mobile Apps* (Nov. 10, 2016) available at <http://psc.apcointl.org/2016/11/10/apco-partners-with-dhs-to-advance-interoperability-and-security-of-mobile-apps/>.

³ APCO, *APCO Launches Application Community (AppComm) Website* (Apr. 23, 2013) available at <http://psc.apcointl.org/2013/04/23/apco-launches-application-community-appcomm-website/>.

- Identifying the Key Attributes of Effective Apps for Public Safety and Emergency Response
 - APCO published the Key Attributes to provide public safety professionals, app developers, and the general public with an outline of important considerations for apps that include public safety or emergency response features.⁴
- Developing an App Testing Program for Public Safety
 - Working with private and public sector partners, APCO conducted pilot testing programs to evaluate app efficiency and security.⁵ Recently, APCO partnered with the DHS Science & Technology Directorate to refine an evaluation program designed to ensure interoperability and security for public safety apps.⁶
- Convening Experts to Address Public Safety Requirements, App Security, and Interoperability
 - APCO has hosted multiple workshops to address app-related issues, partnering with organizations with significant expertise in apps, including DHS, NIST, PSCR, and FirstNet. These events gathered public safety professionals, app developers, cybersecurity professionals, and other subject matter experts to address issues such as security requirements, data classifications, and interoperability for public safety apps.⁷
- Issuing Specific Guidance on 9-1-1 Apps
 - In 2015, APCO published a White Paper and Fact Sheet⁸ to educate the general public and the app development community on the state of the 9-1-1 system and the role that apps can play currently and in the future. Subsequently, APCO participated in the FCC's workshop on the use of smartphone apps in the provision of 9-1-1 service.⁹
- Exploring the Bigger Picture of Broadband Implications for PSAPs

⁴ APCO, *APCO Identifies Key Attributes of Effective Apps for Public Safety and Emergency Response* (Aug. 19, 2013) available at <http://appcomm.org/article/apco-identifies-key-attributes-of-effective-apps-for-public-safety-and-emergency-response/>.

⁵ APCO, *Partnering to Improve Public Safety Apps* (Nov. 2, 2015) available at <https://www.apcointl.org/tabletopx/partnering-to-improve-public-safety-apps/>.

⁶ APCO, *APCO Partners with DHS to Advance Interoperability and Security of Mobile Apps* (Nov. 10, 2016) available at <http://psc.apcointl.org/2016/11/10/apco-partners-with-dhs-to-advance-interoperability-and-security-of-mobile-apps/>.

⁷ APCO, *APCO Holds Workshop to Identify Initial Public Safety Requirements for Mobile Apps* (Feb. 25, 2014) available at <http://appcomm.org/article/apco-holds-workshop-to-identify-initial-public-safety-security-requirements-for-mobile-apps/>, which resulted in a NIST Interagency Report, *Public Safety Mobile Application Security Requirements Workshop Summary* (Jan. 2015) available at <http://nvlpubs.nist.gov/nistpubs/ir/2015/NIST.IR.8018.pdf>; APCO, *APCO Convenes Experts to Advance Security of Public Safety Apps* (June 2, 2015) available at <http://psc.apcointl.org/2015/06/04/apco-convenes-experts-to-advance-security-of-public-safety-apps/>, which resulted in a NIST Interagency Report, *Identifying and Categorizing Data Types for Public Safety Mobile Applications* (May 2016) available at <http://nvlpubs.nist.gov/nistpubs/ir/2016/NIST.IR.8135.pdf>; APCO, *APCO Gathers Experts to Advance Public Safety App Interoperability* (Oct. 31, 2016) available at <http://psc.apcointl.org/2016/10/31/apco-gathers-experts-to-advance-public-safety-app-interoperability/>.

⁸ APCO, *The Status of 9-1-1 Apps* (Apr. 27, 2015) available at http://appcomm.org/wp-content/themes/directorypress/thumbs/WhitePaper_911Apps.pdf; APCO, *Fact Sheet: Mobile Apps and 9-1-1* (Apr. 27, 2015) available at http://appcomm.org/wp-content/themes/directorypress/thumbs/FactSheet_911Apps.pdf.

⁹ See Federal Communications Commission, *Public Safety and Homeland Security Bureau Announces Workshop on the Use of Smartphone "Apps" to Assist in the Provision of 911 Service*, Public Notice, DA 15-411 (rel. Apr. 1, 2015) available at https://apps.fcc.gov/edocs_public/attachmatch/DA-15-411A1.pdf.

- APCO is conducting a comprehensive analysis of the impact of broadband technologies on PSAPs, specifically addressing the governance, cybersecurity, technical, operations, workforce, and training perspectives.¹⁰ The goal of this undertaking is to help telecommunicators, PSAPs, 9-1-1 authorities, and others to understand and prepare for evolving broadband communications technologies, including apps, that will impact PSAP operations and improve support to emergency responders.

II. Apps Cannot Replace 9-1-1

The 9-1-1 network is trusted, reliable, and secure. But it is based on decades-old telecommunications infrastructure and technology that lacks many features currently available to smartphones operating on modern broadband networks. In the future, a fully deployed and functioning NG9-1-1 system will deliver advanced features with the reliability, security, and universality necessary for mission critical use. This will require end-to-end IP connectivity enabling voice and data communications to flow from the 9-1-1 caller/data source to the PSAP, be properly reported and archived, and further transmitted between public safety enterprise systems.

Successful implementation of NG9-1-1 – which entails seamless connectivity, interoperability, and data sharing – depends upon use of standards that are accredited, well-defined, and consensus-based. Effective standards will enable PSAPs to benefit from the economies of scale, interoperability, and innovation common to many broadband-enabled technologies.¹¹ Absent such standards, apps lack a universal method for connecting with PSAPs.¹²

¹⁰ APCO, *APCO Launches Project 43 to Tackle Broadband Implications for the PSAP* (Feb. 10, 2016) available at <http://psc.apcointl.org/2016/02/10/apco-launches-project-43-to-tackle-broadband-implications-for-the-psap/>.

¹¹ For example, effective standards will enable rapid growth in areas such as the Internet of Things, Smart Cities, and the wireless technology supporting FirstNet. Comparable standards for NG9-1-1 will allow PSAPs to enjoy similar benefits and realize new gains arising from successful integration with these other technologies.

¹² Further, without standards that ensure interoperability, PSAPs adopting apps would risk becoming mired with expensive, proprietary, and potentially inferior tools.

As an interim solution, some apps are delivering information through individual web-based interfaces. While this might be acceptable for augmenting a 9-1-1 call, it cannot serve as a replacement. Not only does this introduce a significant cybersecurity risk for PSAPs, it contravenes the universality of 9-1-1 because an app's functionality varies according to whether and to what degree PSAPs use the web-based interface. Telecommunicators cannot be expected to simultaneously monitor a separate interface for each app.

Other apps insert additional information into existing ALI/ANI fields, which creates a problematic lack of uniformity in the way information is being transmitted to PSAPs. For example, because class of service designations have not been modified to accommodate these methods, public safety telecommunicators who will be making operational decisions based on these traditional fields that, unbeknownst to them, are no longer reliable.

Briefly put, APCO is not aware of any apps that are capable of functioning consistently with existing 9-1-1 systems and accounting for the operational needs of PSAPs.¹³ This has been required of every new technology introduced into the 9-1-1 system, from wireless phones, to VoIP, to SMS-based text-to-911. Not only were these technologies implemented reliably and securely within the existing 9-1-1 infrastructure, but great care was taken to prevent detrimental impacts on PSAP operations. This not an easy task, but it is essential for maintaining existing levels of reliability and security.

Any 9-1-1 app, whether offered while the nation's networks transition or as part of a complete NG9-1-1 system, must:

- Comply with accredited, consensus-based standards
- Work anywhere in the country
- Be as reliable as the existing 9-1-1 system
- Preserve the familiar simplicity of dialing 9-1-1

¹³ Part of meeting PSAPs' operational needs entails integration with official record management systems, which is difficult to do for apps that do not integrate with the 9-1-1 infrastructure.

- Connect (route) users to the appropriate PSAP
- Efficiently use and monitor a device's battery and have a mechanism in place to restrict battery-intensive features as the battery life nears a safety threshold
- Work without delay, regardless of any updates to the device's operating system or the app itself
- Be free to use for the public
- Not impose unreasonable costs on PSAPs
- Comply with FCC rules, state and local regulations, and industry best practices
- Be device and operating system agnostic
- Meet public safety's cybersecurity requirements

Unless apps are able to satisfy these requirements, none should be offered as a replacement for a traditional call to 9-1-1. In the meantime, APCO will continue advising against apps intended to replace 9-1-1 and working to ensure apps are safe and effective. Many of the shortcomings of interim 9-1-1 apps are discussed more fully in APCO's white paper¹⁴ and in the sections below.

III. Critical Issues Must Be Addressed Before Apps Are Used to Augment Calls to 9-1-1

Apps designed to augment, rather than replace calls to 9-1-1 present significant operational problems for PSAPs and put users at risks. Some well-meaning, talented developers have produced apps with guidance from public safety communications experts, but even with the best of intentions and thoughtful design, a host of issues must be addressed before apps are used to augment 9-1-1.

a. Reliability is Difficult to Ensure

Apps are relatively inexpensive to develop and can be rapidly upgraded to keep pace with advances in commercial technology. These strengths, however, come with significant challenges for 9-1-1. With so many variables in how apps function, given the variety of devices, operating systems, app versions, networks, and interfaces, it is difficult if not impossible to

¹⁴ *The Status of 9-1-1 Apps*, available at http://appcomm.org/wp-content/themes/directorypress/thumbs/WhitePaper_911Apps.pdf.

determine if an app will perform reliably in an emergency. Ensuring reliability is especially difficult because, until NG9-1-1 networks are in place to handle data for emergency calls, interim 9-1-1 apps must depend on the public Internet, which introduces several points of vulnerability. Unless apps are held to the same high standard for reliability and security as traditional elements of the 9-1-1 system, it will be impossible to ensure apps are safe for the public to use.

b. Apps Are Not Guaranteed to Remain Functional

The dynamic nature of the app industry – where developers lose interest in supporting an app or fail to maintain functionality across device or OS versions – goes against the public’s expectation of free, constant access to 9-1-1. When a person needs emergency assistance, they don’t want to discover an app is no longer supported or requires an update.¹⁵ Unlike regulated service providers, app developers are not required to provide 9-1-1 service. Thus, even if developers appreciate the seriousness of the endeavor they are undertaking, there is no regulatory backstop to guarantee that the app will be functional indefinitely and serve the public when an emergency arises. Until this changes, PSAPs and the public must carefully weigh apps’ potential benefits against their inherent lack of permanence.

c. Misleading App Descriptions Harm Public Safety

Many 9-1-1 apps are described with blatantly false or misleading statements that put the public at risk and do a disservice to public safety professionals. For example, some apps claim to send information directly to first responders but neglect to explain that first responders would only receive the information if they download the app, pay a fee, and actively monitor it for

¹⁵ Indeed, the stakes are high for public safety, and app developers need to account for the potential liability exposure that comes with providing 9-1-1 apps. Failure to comply with 9-1-1 regulations can have significant financial consequences. For example, fines were assessed in the wake of an April 2014 outage in which more than 6,600 calls to 9-1-1 went undelivered. See FCC Fines Centurylink and Intrado \$17.4 Million for Multi-State 911 Outage, *Press Release*, (rel. Apr. 6, 2015) available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2015/db0406/DOC-332853A1.pdf.

updates. Additionally, promoting such a feature introduces the significant harm of confusing the public into thinking that it's a good idea to bypass PSAPs, which could place first responders and those in need of assistance in danger.

Among the most egregious misleading statements is that apps will provide a “precise location” and find users when 9-1-1 can't. The potential for apps to improve location accuracy for 9-1-1 is often described as “Uber for 9-1-1,” the idea being that if an app can arrange a pick-up at the right place, locating 9-1-1 callers should be simple. This is a false and dangerous oversimplification. Such statements assume a successful end result without fairly considering how accurate locations are obtained or the practicality of using such a process for 9-1-1.

Apps like Uber use a device's commercial location based services, which may entail leveraging commercial databases of WiFi and Bluetooth access points in addition to GPS to obtain a horizontal location estimate. By itself, the location technology can be several blocks off, likely much worse for indoor locations or dense urban areas. The successful pickup with Uber depends upon user verification and, if necessary, correction of the estimated location. It is true that 9-1-1 could benefit from the commercial location-based technologies in smartphones, but developers who promise a “precise location” are deceiving consumers and undermining legitimate efforts to improve location accuracy for 9-1-1.¹⁶

In January 2015, the FCC adopted an Order to substantially improve wireless 9-1-1 location accuracy. The nation's largest wireless carriers are working with public safety organizations, including APCO, to achieve a “dispatchable location,” which exceeds what's

¹⁶ Claims of a “precise location” and comparisons to Uber are especially harmful because consumers may do not think about how often the location in apps actually requires correction. It's also worth considering that the delivery of automatic location information to PSAPs becomes most critical when a caller cannot report his or her own location. Thus, user correction would only be useful for 9-1-1 in a narrow set of circumstances. Worse, user-corrected locations in apps create an opportunity for “swatting” attacks in which nefarious users report fake emergencies at a victim's location that are corroborated by a spoofed address that is delivered as automatic location information.

possible for apps like Uber. A dispatchable location includes the street address plus whatever additional information is needed to find the caller, such as the apartment number, floor, or office suite, not just a pin on a map or the street address. For indoor environments, which are especially challenging for location technology, this additional information is essential for 9-1-1. Thus, the “precise” location advertised by apps does not provide what’s actually required for 9-1-1. Further, dispatchable locations will be based on verified access points and provided through secure and reliable processes pursuant to FCC requirements.

While apps may offer useful methods for improving the information being delivered to PSAPs, developers must avoid harming larger efforts to improve 9-1-1 location accuracy.

IV. Conclusion

APCO appreciates the opportunity to comment on the Bureau’s proceeding to address issues related to how smartphone apps interface with 9-1-1 systems. This is a time of exciting change for 9-1-1. As consumers, we’ve seen that mobile apps hold great potential. 9-1-1 may eventually benefit from these tools, but considerable work remains to protect the public and the integrity of the emergency response system. Just as agencies deploy text-to-911 with slogans like, “Call if you can, text if you can’t,” the public safety community will need to educate the public and manage expectations to ensure that the potential benefits of apps are realized in a way that minimizes the inherent risks. APCO will continue to leverage its expertise to serve as a resource to app developers, the public, and PSAPs.

Respectfully submitted,

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