Comments of Alma

Wireless E911 Location Accuracy Requirements - PS Docket No. 07-114

SUBMITTED BY

ALMA Safety and Every Second Counts, Inc.

December 22, 2014

TABLE OF CONTENTS

COMMENTS OF ALMA 3

INTRODUCING ALMA 4

ROADMAP RECOMMENDATIONS 6

OTHER CONSIDERATIONS 7

Before the
Federal Communications Commission
Washington, DC 20554

In The Matter Of	)	
	)	
Wireless E911 Location Accuracy Requirements	)	PS Docket No. 07-114
	)	
	)	

COMMENTS OF ALMA

Alma Safety and Every Second Counts, Inc. (together, "Alma") respectfully submit the following comments in connection with Public Notice DA 14-1680 released November 20, 2014 by the Federal Communications Commission ("FCC" or "Commission"). [(1)]

Alma commends the FCC for encouraging voluntary industry solutions that would make the wireless user community and the general public safer through improvements to location accuracy.[(2)] The recently released "Roadmap"[(3)] is the direct result of the Commission's request that stakeholders work on a consensus approach to improving wireless location accuracy.[(4)]

The Roadmap holds considerable promise for improving indoor location accuracy and enhancing the 911 platform's quality of service on a national level. The goal of attaining dispatchable location for all wireless calls, indoors and outdoors, is no longer in the realm of fiction.

A-GPS, GNSS, OTDOA and other location technologies will deliver increasingly precise X-Y-Z coordinate information to dispatchers. For the ~50% of 911 calls that originate from outdoor locations, the inherent value of such capabilities is clear. For the ~50% of 911 calls that originate from indoors and in dense urban environments - the value proposition presented by these technologies is less evident.

While it is useful to get a location lock within 50 meters (latitude-longitude) and 3 meters (elevation), the true value is in translating this location into a Room/Floor/Address that dispatchers, and in turn, First Responders, can act upon. Knowing that someone is in distress 100 feet in elevation isn't as actionable as knowing that someone is in distress at "7th floor, Apartment 7B" of an apartment building.

INTRODUCING ALMA

We at Alma have been focused on attaining dispatchable location for 911 dispatchers and First Responders since early 2014. Today, Alma is the world's first system capable of delivering dispatchable indoor location to 911 PSAPs by leveraging iBeacon, Bluetooth LE and Wi-Fi devices for fingerprinting a location and associating a dispatchable address to it.

Alma is optimized for the smartphone and allows any citizen to trigger a 911 call within 3 seconds. Alma will be able to determine their closest known location, key information about the citizen, and the cell phone number/source of the call.

This information is provided to the dispatcher using sophisticated Text-to-Speech algorithms, allowing anyone to use the platform even if they have disabilities or even if they are not in a position to speak on the phone.

Alma is complementary to the existing voice-based 911 platform. When a citizen cannot dial 911, or does not wish to, Alma is a viable option. In the future, NG911 will propagate IP-based communications into PSAPs, allowing Alma to dispatch emergency requests over more than just voice. Alma is designed to work with PSAPs today, and tomorrow.

Alma sees Bluetooth-based Beacons as the future of indoor dispatchable location for the next decade. Millions of beacons are already active today and billions will be by 2016. In the context of 911, these beacons are akin to the landline hooks we

used to have before cellphones became the norm. They are stationary "anchor points" that we will be able to read and leverage whenever an emergency situation demands it.

Alma's R&D team has spent the last 12 months evaluating various Bluetooth LE chipsets, battery technologies, signal sensitivities, broadcast intervals and other parameters to come up with Beacons that rival the venerable Smoke Detector for efficacy and battery life.

Alma Beacon Highlights:

- Alma has been able to get Beacon energy efficiency high enough to last 5+ years stuck to a household wall.
- Alma beacons advertise their location every 800 milliseconds, allowing emergency calls to get split-second dispatchable location associated to them.
- Alma beacons can be configured to deliver floor or room level location, depending on how many beacons are leveraged.
- Alma beacons are secured and encrypted, providing spoof/tamper protection against malicious adversaries.
- Alma beacons alert the beacon owner in the event batteries are running low. Alma beacons have custom software that can be updated regularly with enhanced features.
- Alma beacons periodically run "location checks" that verify their location with the assistance of the beacon owner.

ROADMAP RECOMMENDATIONS

The Roadmap acknowledges that beacon-powered dispatchable location is the gold standard and future of 911. The Roadmap however is lacking in key implementation details and we are concerned that roles and responsibilities have been prematurely assigned given this reality.

We recommend that the following specifics be included in the FCC Location Accuracy Roadmap:

1. NEAD should not be a database that is curated and populated by a nominated owner or group. This construct made sense in the closed telecom era of 911, but in a highly innovative period leading to NG911, it makes sense to consider more open and transparent options.

2. Instead of a classical Database model, National Address and Dispatchable Location information should be exposed as an Application Programming Interface (API) built on secure & open standards. The API should allow various "harvesters" of dispatchable location to contribute to the database if they meet certain veracity standards.

3. The National Address API (NAAPI) should allow any verified and approved account holder secured access to the data. Centralized provisioning and control of accounts will also allow authorities to revoke access instantly should anything untoward occur.

4. The NAAPI should be designed as a cloud-based distributed system, with multiple synchronized snapshots deployed for maximum durability under all operational conditions. A Domain Name System (DNS) system that routes requests to the closest available NAAPI server is a proven approach that scales to billions of requests per day.

5. The NAAPI should leverage HTTPS Representational State Transfer (REST) to enable easy integration with various other public and private sector 911 services. A robust and familiar protocol will promote open innovation across the entire 911 spectrum.

6. The NAAPI should store the following data:

    - List of 911 Primary and Secondary PSAPs (inclusive of address and phone number)
    - GIS Polyline data identifying jurisdictions served by a given PSAP (this may take time to achieve)
    - List of Device Owners (an Owner can have one or more devices for their home/office/organization)
    - List of Device ID (actual MAC address or UDID or similar identifier)
    - List of Dispatchable Locations (Room/Apartment/Floor, Address1, Address2, City, State, Zip)

Owners, Device IDs and Dispatchable Locations are all related, allowing an authorized NAAPI user to query by Device ID and return a dispatchable location if available.

Alma will be releasing its own version of the NAAPI for beta testing and public review by February 2015. We look forward feedback from the FCC, NENA and APCO on this aspect.

OTHER CONSIDERATIONS

Beyond location accuracy, we recommend that the FCC take the following developments into consideration for steering the future of 911:

1. Apps running on Smartphones and other connected devices are the future of 911 dispatch. Beacons, Wi-Fi and Bluetooth technologies seamlessly integrate with these devices. Increasingly, we are seeing a spike in the number of "Wi-Fi only" devices such as iPads, Tablets. T-Mobile just recently launched a Wi-Fi calling feature. Increasingly people are leveraging Over-the-Top Apps to communicate Voice+Video+Text, and much of that is over Wi-Fi vs. 4G/LTE networks.

   Facts: In 2014, 62% of net-adds to Big 4 Telecom subscriptions were non-smartphone devices. Tablets accounted for 70% of these net-adds. 9 out of 10 Tablets sold today are Wi-Fi only. Source: Chetan Sharma Consulting

   Key Takeaway: Access to 911 must not be a voice-only proposition. 911 Apps on Smartphones (via Wi-Fi or 4G/LTE) should have equal standing to Dial 9-1-1 solutions. A citizen should be able to trigger an App-to-911 as easily as they can dial 9-1-1. That means access to the app without having to enter a PIN or Password or bypass the lock screen.

2. The "Z" axis data is becoming increasingly prevalent in phones that leverage Barometric pressure sensors. The iPhone 6, 6+ and newest Android devices already have them and this capability will proliferate rapidly amongst mid-and-low-range devices.

   Key Takeaway: If elevation information can be gleaned from these low-cost sensors and A-GPS, it should improve outdoor location accuracy significantly. There should be no need for complex antenna infrastructure or custom chipsets to achieve Z-axis capabilities.

We at Alma look forward to responsibly innovating in the 9-1-1 Public Safety Space. We see a future where 911 is an evergreen, open and secure platform enabling authorized services to integrate with it. A platform that takes weeks to integrate with, not years. A platform that evolves in lock step with the technologies and standards around it.

A smarter, more resilient and more accessible public safety platform is within reach. We look forward to engagement with the FCC, NENA and the APCO on these matters.

December 22, 2014

Respectfully Submitted,

Alma Safety and Every Second Counts, Inc.

/s/ Zubin Wadia

Zubin Wadia
Founder

8 Park Avenue
Valhalla, NY 10595
914-498-9929

---

(1) P.S. Docket No. 07-114, Public Safety and Homeland Security Bureau Seeks Comment In The E911 Location Accuracy Proceeding On The Location Accuracy "Roadmap" Submitted By APCO, NENA And The Four National Wireless Carriers, Released November 20, 2014.

(2) Wireless E911 Location Accuracy Requirements, Third Further Notice of Proposed Rulemaking, 29 FCC Rcd 2374, ¶ 6 ("NPRM") ("[W]e encourage industry public safety entities, and other stakeholders to work collaboratively to develop alternative proposals for our consideration.); id.¶ 26 ("[W]e invite relevant stakeholders – including public safety and industry – to propose a consensus approach").

(3) APCO, NENA, Carrier Cover Letter Roadmap for Improving E911 Location Accuracy filed 11/18/2014 http://apps.fcc.gov/ecfs/document/view?id=60000986637

(4) NPRM ¶ 26.