

# RAPIDSOS

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*Partnering With the 9-1-1 Community to Bring Mobile Data to the PSAP*

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NASNA Webinar

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February 18, 2016

# Who are the presenters today?



## **Michael Martin**

CEO / Co-Founder of RapidSOS

*'Bringing innovative technologies to market'*

Background: Venture Capital, Numerous Start-Ups

[mmartin@RapidSOS.com](mailto:mmartin@RapidSOS.com)



## **Reinhard Ekl**

Director 9-1-1 at RapidSOS

*'Hands-on emergency response'*

Background: EMT/Paramedic, Google

[rekl@RapidSOS.com](mailto:rekl@RapidSOS.com)

# Agenda for today



- Who we are
- Where we're coming from
- What we've learned along the way
- User Perspective
- PSAP Perspective
- Technology Platform
- Launch plan
- Opportunities for testing
- Training material
- Your feedback
  - Thoughts?
  - Questions?

# Smartphones have become very powerful devices



- Precise location (x,y,z)
- Real-time health / medical information
- Connection over any medium. cellular, bluetooth, wifi
- Camera feed
- Texting
- Voice
- Video conferencing
- Route planning / directions
- Emergency contacts
- Language translation

# So we started thinking: *“This should be easy, like Uber”*



Michael Martin



Nick Horelik



Henry Katz



Anna Potapov



Reinhard Ekl



Have helped commercialize 70+ start-ups

Developed mission critical code for national labs

Extensive mobile, telecom, and back-end development experience

Have helped raise \$4B+ for rapidly growing companies

# Turns out: It's not so easy – lots of aspects to consider



## “Public Safety Considerations for Smartphone App Developers”

- Route to the correct PSAP, not the closest PSAP
- Supply information through ALI/ANI database
- Most PSAPs can't receive additional data
- PSAPs treat calls with different COS differently
- Notifying family/friends doesn't replace calling 911
- App must not override 911 call through native dialer
- Immediate voice connection to PSAP is paramount
- Family/friends should not interfere with 911 call
- Not all users have Location Services activated
- Not all PSAPs have access to the internet
- Automated dialing is forbidden in some jurisdictions
- Third party call centers need to have certain abilities
- Apps need to prevent inadvertent dialing

# And even more considerations for Public Safety Apps...



***“An effective  
app should..”***

- Comply with industry 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
- Connect (route) users to the appropriate PSAP
- Efficiently use and monitor a device’s battery
- 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

# 9-1-1 Advisory Board: advice & guidance



**Christy Williams**

9-1-1 Program Manager, North Central Texas Council of Governments  
Currently President of NENA  
20-year industry veteran with positions in Operations, Education, Training



**Mark Fletcher**

Avaya's Chief Architect for Worldwide Public Safety Solutions  
Co-vice chairman of the EENA NG112 Committee  
"The Voice of 9-1-1" – Prolific Podcaster



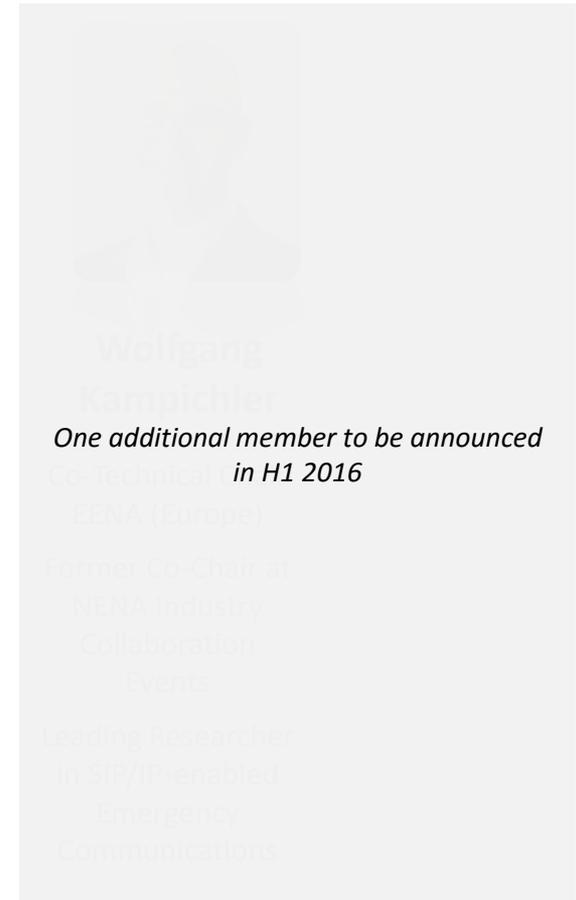
**Patrick Halley**

Executive Director, NG9-1-1 Institute  
Formerly at FCC (Associate Chief Wireline Competition Bureau, Legal Advisor to Chairman Wheeler)  
Formerly NENA Director of Government Affairs



**Thera Bradshaw**

Formerly President APCO, NENA  
Formerly CIO City of Los Angeles  
Formerly 9-1-1 Executive Director, Hawaii



# Telecom Advisory Board: Leading Industry Experts



**Blair Levin**

Sr. Fellow, Brookings Institution; Executive Director Gig.U; Formerly FCC Chief of Staff and Executive Director of National Broadband Plan



**Terry Kramer**

UCLA Faculty, EiR Harvard; Formerly Regional President, Vodafone Americas; Verizon Wireless Board Member



**Dennis Patrick**

Formerly Chairman, FCC; President of AOL Wireless; CEO of Time Warner Telecommunications; Strategy Advisor for Time Warner

# We spent a lot of time with PSAPs and in PSAPs

## Tested all 50 US States & Canada

- Tested call routing (correct PSAP along jurisdictional boundaries)
- Verified correct information display on PSAP end (ALI/ANI)
- Tested voice/data quality and interconnection

## Tested Major Metro Areas

- Tested call with civic addresses and non-address locations (geospatial routing)
- Verified correct information display on PSAP end
- Tested voice/data quality and interconnection
- Gathered feedback from PSAP administrators/management

## In-depth tests w/ PSAP partners

- Tested variety of edge cases (e.g., transfer calls, non-standard addresses, unconventional zone of service boundaries)
- Conducted more than a dozen focus groups with Telecommunicators to understand procedures and optimize data delivery

## NG911 Pilots

- Working with NG911 First Movers to have direct ESInet interconnection through encrypted VPN
- Working with software vendors on CPE/CAD integration (NG911 functionality in legacy E911 system)

## Industry Organizations

- Attended NENA and APCO Conferences
- Participated in NENA Developer Conference
- Currently participating in several NENA Working Groups (e.g., Additional Data, Class of Service)

## Results

20,000+ test calls

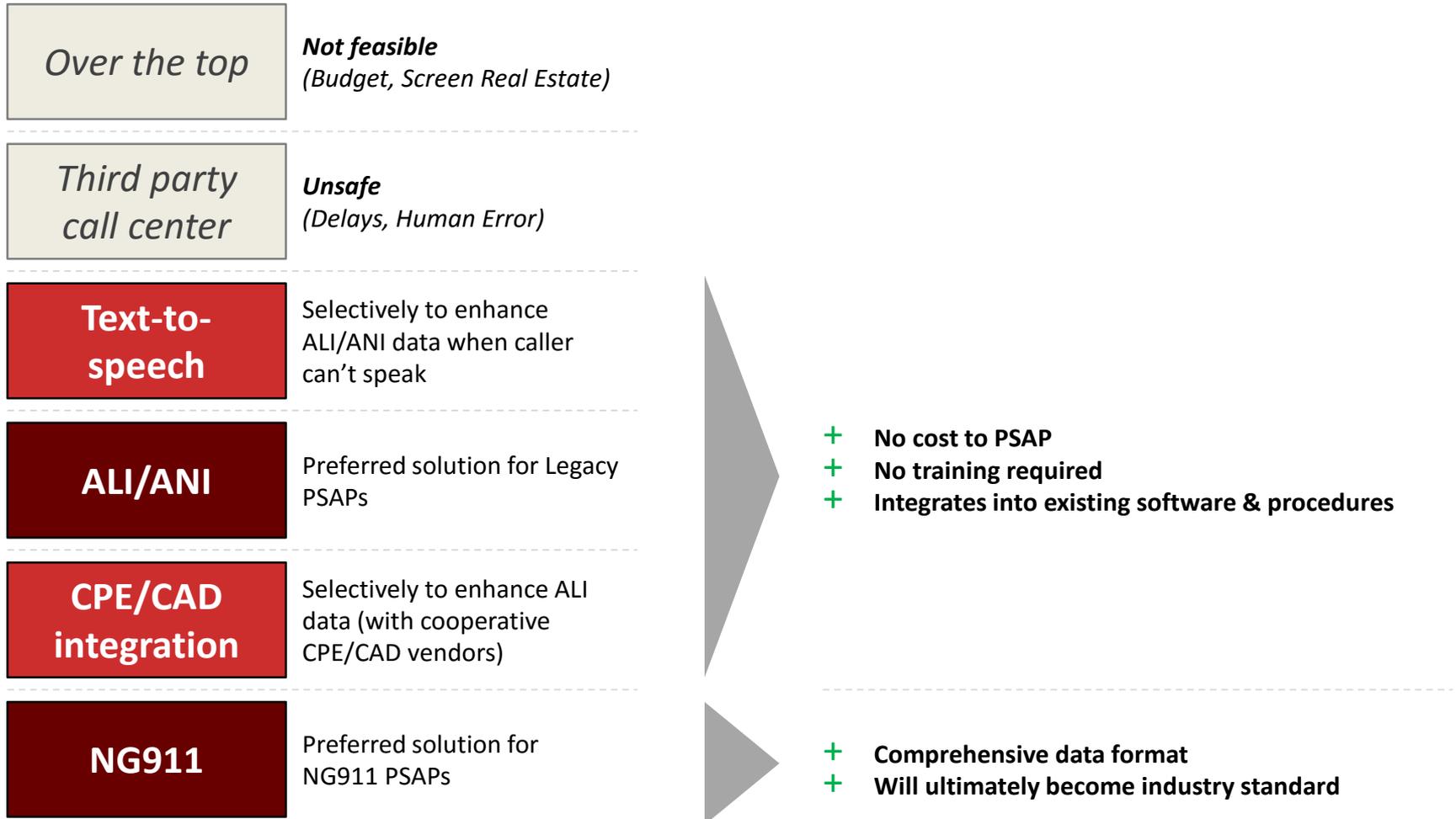
Tests in 50 states, 50+ metro areas

Compatible with all 6,300+ PSAPs

Understand PSAP Perspective

Support of industry leaders

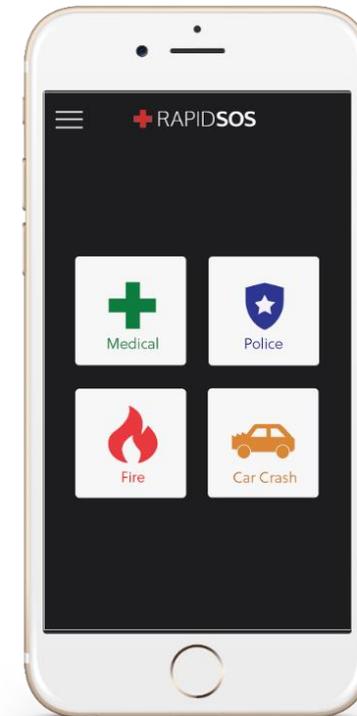
# What we've learned: Many ways to bring data to PSAP..



# The RapidSOS Haven Application

- Precise location  
(Civic dispatchable address + x/y)
- Type of emergency
- Relevant medical & demographic data
- Text-to-speech when the user can't speak

**All through Existing System**  
(ALI/ANI & Voice channel)

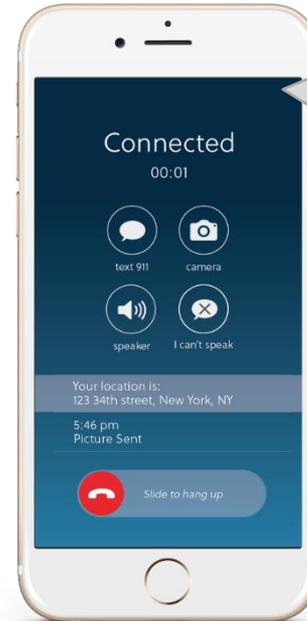


ha·ven ('hāvən): a place of safety or refuge

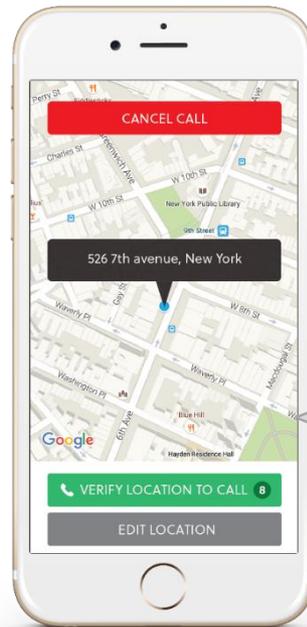
# User perspective: intuitive and easy to use



**1 Trigger Alert**  
Caller triggers an alert by selecting one of four emergency types



**3 Speak to PSAP**  
Caller gets connected to PSAP based on location, voice connection is established



**2 Confirm location**  
Caller confirms location on map or selects pre-set locations

# PSAP Perspective: Like an E9-1-1 call, but better data (1/2: Civic address type)

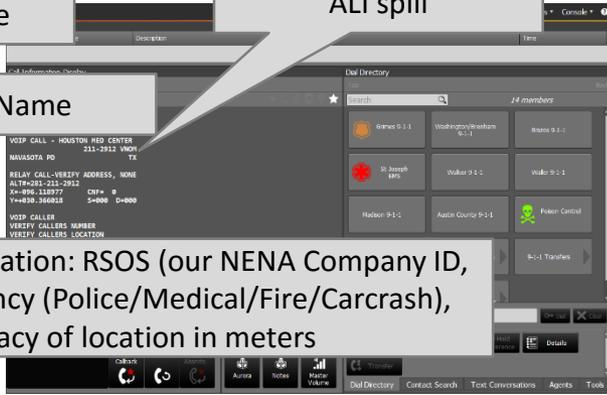
## Raw ALI Format

## CPE/CAD display

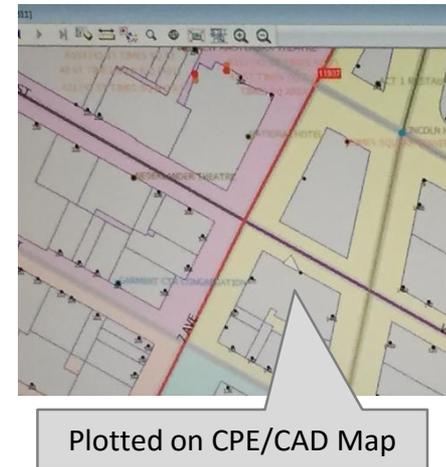
11/17/2015 09:42:28  
(650) 804-0878 VOIP ID= 162  
EKL, REINHARD - RAPIDSOS MOBILE  
526 ESN 12345  
7TH AVE  
RSOS POLICE ACC 5M  
NEW YORK NY  
CO=RSOS P# (618) 211-5610  
X=-073.988814 Y=+40.753808

Callback number  
Class of Service  
Name  
MSAG address  
Additional Information: RSOS (our NENA Company ID, Type of Emergency (Police/Medical/Fire/Carcrash), Accuracy of location in meters  
Lat/Long

ALI spill



The screenshot shows a software interface with a 'Dual Directory' window. The directory lists several entries with icons and names, including 'St. Joseph 800', 'Walker 9-1-1', 'Walker 9-1-1', 'Hudson 9-1-1', 'Austin County 9-1-1', and 'Piscataway Central'. The main window behind it displays call information, including a 'Description' field and a 'Call Information Details' section with fields for 'RELAY CALL - VERIFY ADDRESS, NONE', 'ALTM=211-211-2912', 'R=090.32877', 'CR=0', 'Y=009.366018', 'S=000', and 'D=000'. There are also fields for 'VOIP CALLER', 'VERIFY CALLERS NUMBER', and 'VERIFY CALLERS LOCATION'.



- When we can provision to MSAG validated address, class of service is VOIP or VNOM
- Additional information available:  
(Type of Emergency, Location accuracy in Meters) will display in ALI
- Information will be transferred to your Mapping Software and CAD

# PSAP Perspective: Like an E9-1-1 call, but better data (1/2: Geospatial location type)

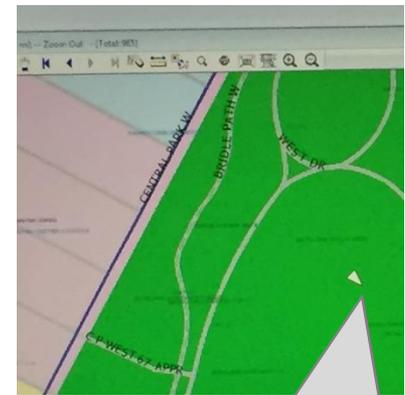
## Raw ALI format

11/17/2015 09:42:28  
(650) 804-0878 WPH2 ID= 162  
RAPIDSOS MOBILE GPS LOCATION  
VERIFY ESN 12345  
VERIFY  
  
NEW YORK NY  
CO=RSOS P# (618) 211-5610  
  
X=-073.988814 Y=+40.753808

Callback number

Class of Service

ALI spill



- When we can't geocode to a civic address, class of service is WPH2 or VMBL (if used)
- No re-bid required, the first location is already the precise device location
- Additional information not available yet (We're working on it)
- Information will be transferred to your Mapping Software and CAD

# What if the caller can't speak or connection is lost?

## “Can't speak”



“The Caller Reinhard Ekl is not able to speak. The Caller, Reinhard Ekl, is experiencing a Police emergency at location 526 7<sup>th</sup> Avenue, New York NY”

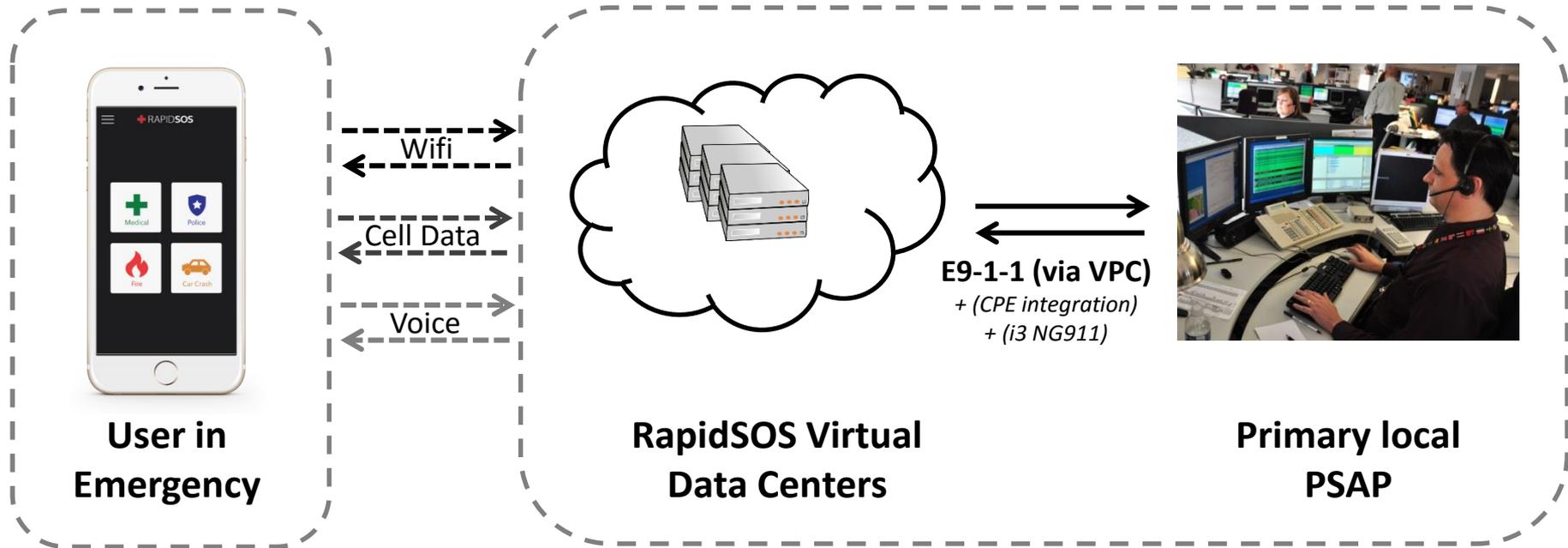
“The Caller has typed a text” “I’m kidnapped”

## “Disconnected”

“The Caller has disconnected. Stay on the line to reconnect. The Caller, Reinhard Ekl, is experiencing a Police emergency at location 380 7<sup>th</sup> Avenue, New York, NY”

“Reconnected.”

# Integrated Intelligence to Manage Session



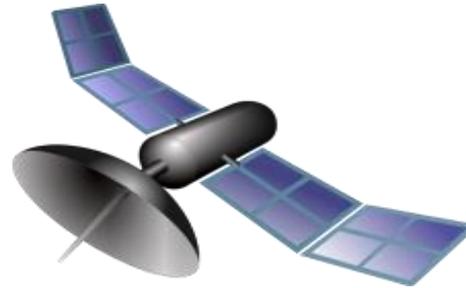
- App determines signal strength & selects appropriate communication
- If no service, keeps trying until emergency is over

- Call routing to local primary PSAP – calls come in as mobile VoIP E9-1-1 calls with more accurate data than wireless calls
- Robust voice connection established with correct PSAP
- RapidSOS actively manage connection to end user to transmit data/voice/text through most effective means possible

# Location, Location, Location



Cell Tower  
Triangulation



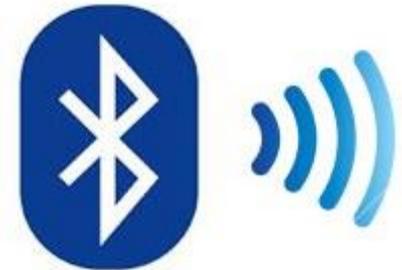
GPS



WiFi

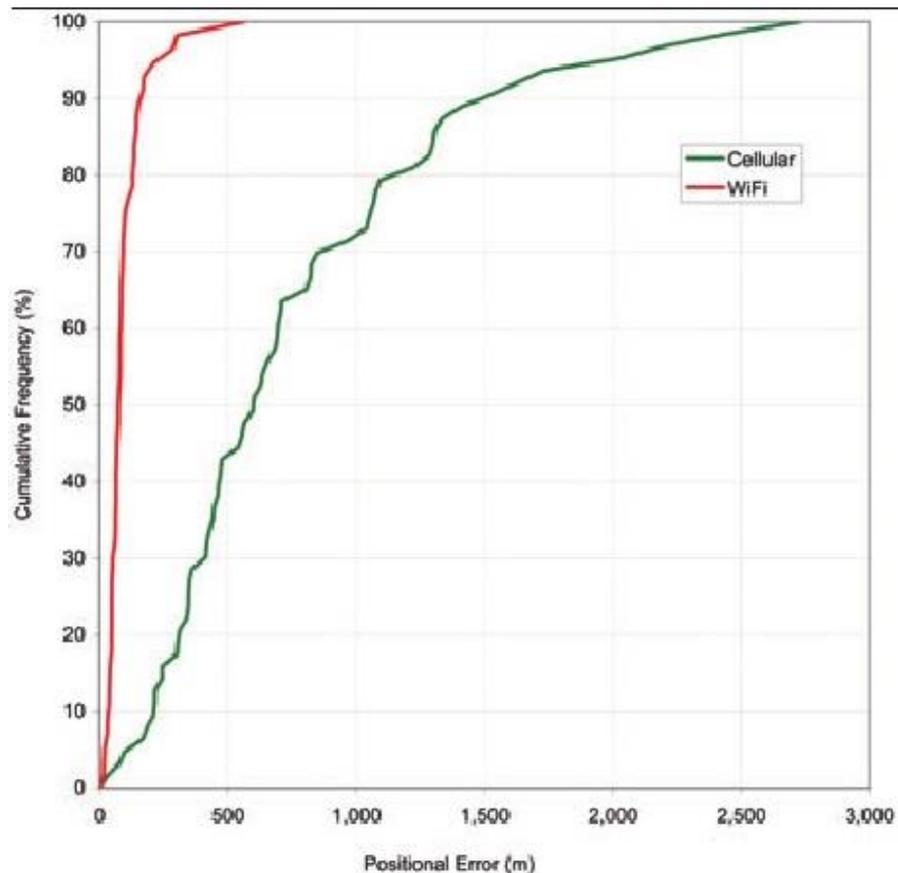


Barometric Pressure



Bluetooth

# One Example: WiFi vs. Cellular location

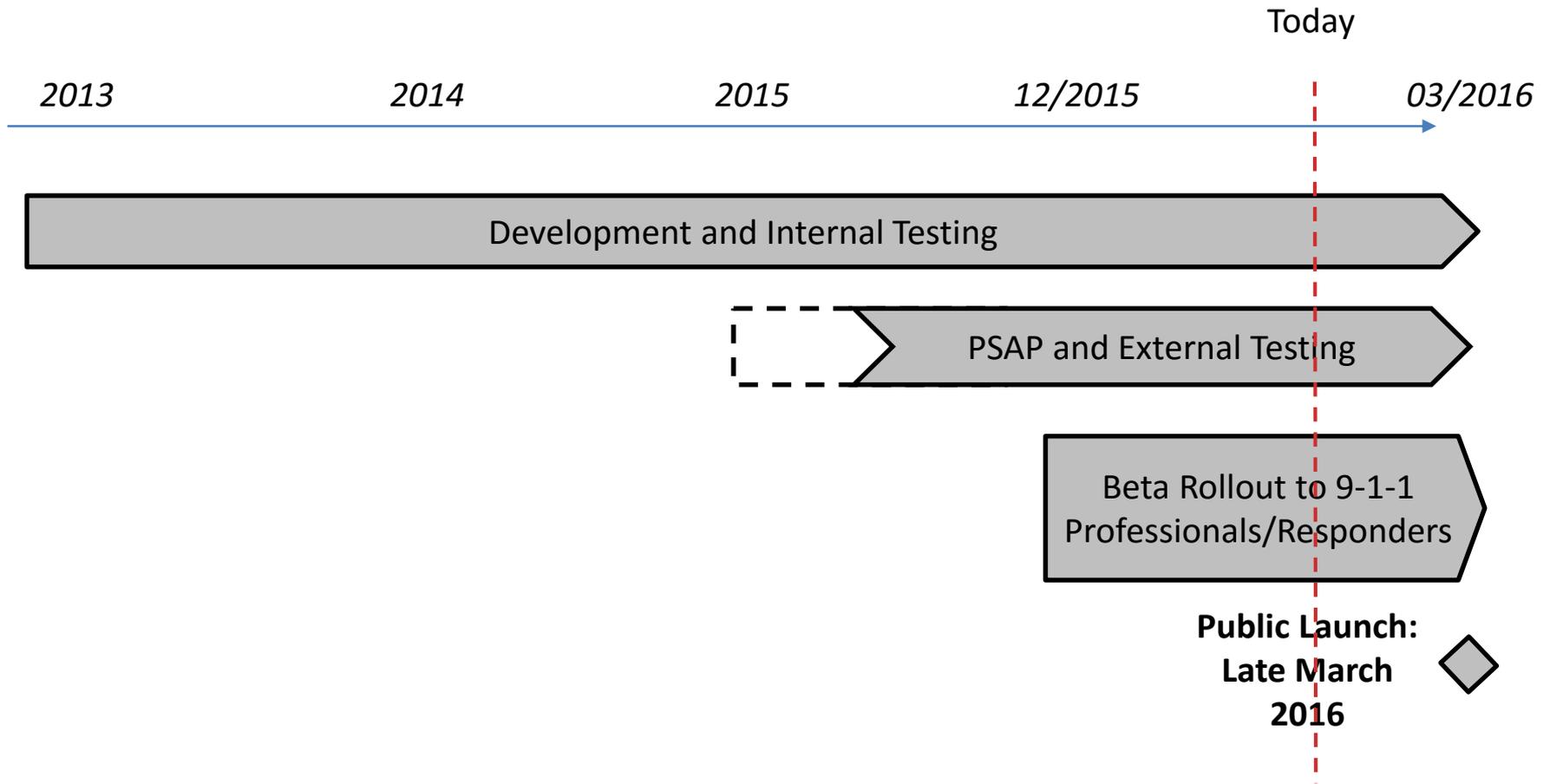


**500%+ more  
accurate on WiFi**

**Add GPS,  
Bluetooth,  
Barometric  
Pressure**

*"Accuracy of iPhone Locations: A Comparison of Assisted GPS, WiFi and Cellular Positioning", University of New Mexico*

# Extensive Testing Leading Up to March 2016 Launch



# 2016 and beyond: Partnerships will drive broad adoption



Corporations



Universities



Insurers



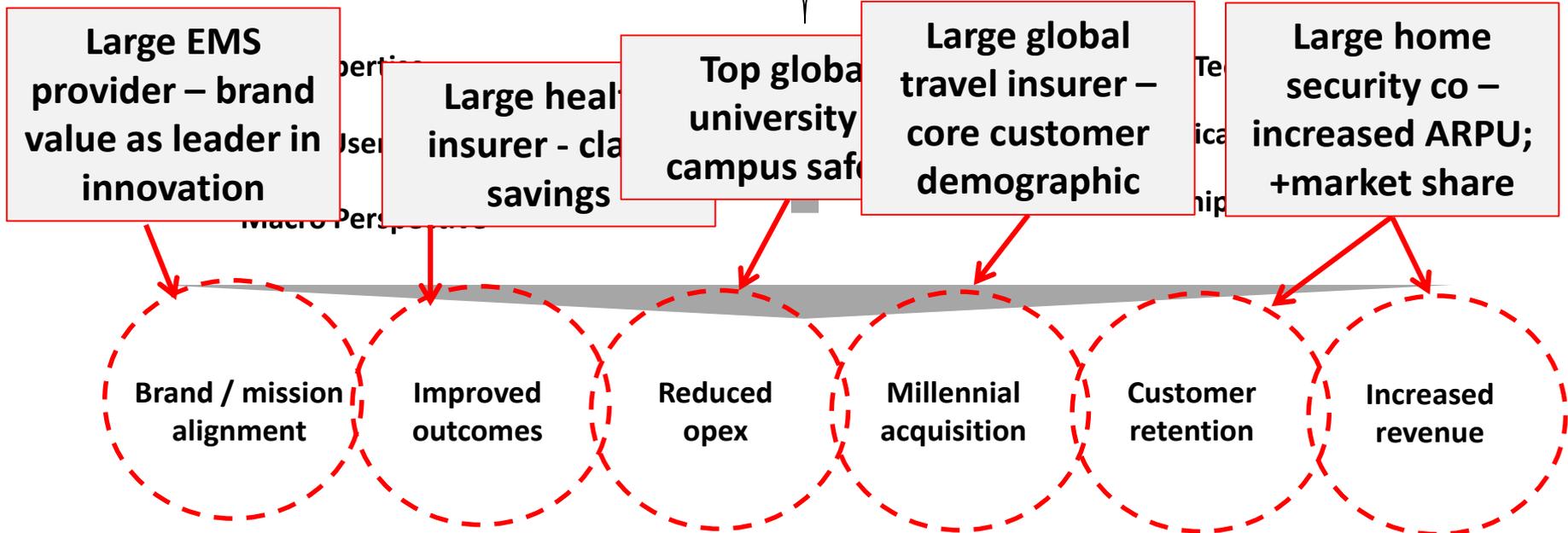
Home Security



Hospitality



Carriers



# We agree with NENA what a “9-1-1 app” should look like

## **NENA** Considerations

- Route to the correct PSAP
- Supply information through ALI/ANI
- Most PSAPs can't receive additional data
- Different COS are treated differently
- Family/friends doesn't replace calling 911
- Never override native 911 call
- Immediate voice connection to PSAP
- Family/friends should not interfere
- Users with deactivated Location Services
- Not all PSAPs have access to the internet
- Automated dialing is forbidden
- Abilities of third party call centers
- Apps need to prevent inadvertent dialing

## RapidSOS approach

- Follow Zones of Service, improved routing accuracy vs. Wireless
- Instant provision of ALI/ANI with up-to-date location and other data
- Only marketing features that are currently available everywhere
- Test program in all 50 states to confirm ALI/ANI display
- Family/friends are notified AFTER call with PSAP has ended
- Native 911 call always has priority, is our failsafe in case of any issue
- No delay in connecting, no introductory IVR
- Family/friends are notified AFTER call with PSAP has ended
- App triggers native 911 dialer if Location Services are deactivated
- No browser/internet required, ALI/ANI & CPE/CAD sufficient
- Alerts are always user-confirmed
- No third party call centers, direct PSAP connection
- Alerts are always user-confirmed

**Goal: Work with the 911 community every step of the way**

# We agree with APCO what a “9-1-1 app” should look like



## Considerations

- Comply with industry standards
- Work anywhere in the country
- Be as reliable as existing system
- Preserve simplicity of 9-1-1
- Connect users to appropriate PSAP
- Efficiently use/monitor battery
- Work without delay
- Be free to use for the public
- No unreasonable costs on PSAPs
- Comply with rules & regulations
- Device and system agnostic
- Meet cybersecurity requirements

## RapidSOS approach

- Comply with and shape standards (NENA working groups)
- Works everywhere, regardless of NG911 status, CPE/CAD
- Multiple fail-safes, intelligent connection management
- “One Touch” approach
- More precise routing than Wireless (not cell tower based)
- Works even when battery is dying
- Full backward compatibility
- Working with charitable organizations & partners to provide for free
- Free to PSAPs
- Full compliance with FCC location regulations, i3, etc.
- Launching with Android and iOS (95% coverage)
- Fully encrypted, Best-in-class security (DDOS, DoS, etc.)

**Goal: Work with the 911 community every step of the way**

# Next step: Testing & feedback!

## Early access to the RapidSOS Haven Application

- For all 9-1-1 professionals with an iOS device (iPhone)
- Live 9-1-1 calling – only test if you're authorized to do so
- We're looking forward to your feedback!

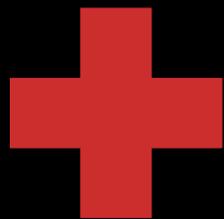
## Learn more

- PSAP Training Portal: [www.RapidSOS.com/psaptraining](http://www.RapidSOS.com/psaptraining)
- NENA Webinar: [www.RapidSOS.com/webinar](http://www.RapidSOS.com/webinar)
- Or write me an email to schedule a conversation – [rekl@RapidSOS.com](mailto:rekl@RapidSOS.com)

**We're looking forward to engaging with all State 9-1-1 Administrators**



Thank you!



# RAPIDSOS

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*Partnering With the 9-1-1 Community to Bring Mobile Data to the PSAP*

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**Thank you & Please be in touch!**

Reinhard Ekl

[rekl@RapidSOS.com](mailto:rekl@RapidSOS.com)