Text-to-9-1-1...Know Your Options

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The Evolution of Text to 9-1-1

- Current Regulatory Status
- Deployment Experiences
- Text to 9-1-1 Responsibilities
- Interoperability
- How SMS to 9-1-1 works
- Future services
- PSAP Deployment Options
- Deployment Process
Regulatory Status

- AT&T, Sprint, T-Mobile and Verizon agreed to make Text-to-9-1-1 available by May 15, 2014
- AT&T, Sprint, T-Mobile and Verizon agreed to implement an automated bounce back message by June 30, 2013
- FCC Report and Order 13-64. Covered Text Providers will provide an automated bounce back message by September 30, 2013
Deployment Experiences

- Integrated Text/Voice deployed in three markets
  - Blackhawk County, Iowa – Iowa Wireless
  - Durham, N.C. – Verizon Wireless
  - State of Vermont – Verizon Wireless, AT&T, Sprint (trial over)
  - Many in process

- Traffic has not overwhelmed the PSAPs or Carriers
- Fraudulent traffic has not been a problem
- Delayed or out of sequence messages have not been a problem
- Current use cases show situational value of text
  - When a voice call would be dangerous
  - For young people where text is the preferred mode of communications
  - When anonymity of text makes a caller choose it over voice
Text-to-9-1-1 Responsibilities

Wireless Carrier Responsibility

PSAP Responsibility

Commercial Location Server

Short Message Center (SMSC)

Multimedia Message Center (MMSC)

TCC

WEB

TTY

ECRF

Emergency Services Routing Proxy (ESRP)

TCC

WEB

TTY

Public Internet or Private IP Network

Existing 9-1-1 Voice Circuit

ESInet

NextGen PSAP (i3 Integrated Voice / Text)

Transitional PSAP (i3 WEB Text)

Transitional PSAP (Carrier WEB Text)

Legacy PSAP

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Text-to-9-1-1 Aggregation

Carrier A
- Commercial Location Server
- Short Message Center (SMSC)
- Multimedia Message Center (MMSC)

Carrier B
- Commercial Location Server
- Short Message Center (SMSC)
- Multimedia Message Center (MMSC)

TCC
- i3
- WEB
- TTY

ECRF

Emergency Services
Routing Proxy (ESRP)
NextGen PSAP
(i3 Integrated Voice / Text)
ESInet

Existing 9-1-1 Voice Circuit

Public Internet
or
Private IP Network

Transitional PSAP
(WEB Text)

Legacy PSAP

S/R
How SMS to 9-1-1 Works – Text Enabled Coverage Area

Help. Man with GUN

From: 303-555-1212
Help. Man with GUN
How SMS to 9-1-1 Works – Text Enabled Coverage Area

From: 911
Get to a safe place

TO: 303-555-1212
Get to a safe place

From: 303-555-1212
Help. Man with GUN
How SMS to 9-1-1 Works – No Text Capable PSAP (Bounce Back Message)

TO: 911
I need the police

Commercial Location Server
Short Message Center (SMSC)
Multimedia Message Center (MMSC)

ECRF

Text Control Center (TCC)

NO TEXT CAPABLE PSAP

Cell X/Y

i3

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How SMS to 9-1-1 works – No Text capable PSAP (Bounce Back Message)

From: 911
Texting to 9-1-1 is not possible from your current location. Please call 9-1-1.
Roadmap to the Future

- SMS will be around for many years (>5 years)
- SMS creates a foundation for future non voice services
- MMES (Multimedia Messaging Emergency Services) in standards development for future non voice communications with 9-1-1 (3+ years away for first device)
- OTT (Over The Top) Applications communications with 9-1-1. (iMessage, Pinger, Blackberry Messenger, etc.) (1+ years)
Non Voice Services beyond SMS

- Commercial Location Server
- Short Message Center (SMSC)
- Multimedia Message Center (MMSC)
- ECRF
- TCC
- i3
- WEB
- TTY
- MMES
- MMES Gateway
- OTT
- OTT Gateway
- Emergency Services Routing Proxy (ESRP)
- NextGen PSAP (i3 Integrated Voice / Text)
SMS Delivery Over TTY

- Developed in early 1960’s
- Does not require any technical change at PSAP
- Competes with voice traffic
- Limited character sets
- Very slow
- SMS users do not understand TTY issues
- Requires PSAP training
- Error handling issues
  - Message-based to character-based conversion
  - Half duplex
  - Message collision
  - Lost shift character – garbled text
  - Unknown message integrity
Web Browser

- Transitional Approach
- Allows rapid implementation
- Low initial cost
- Public Internet connectivity Possible
- Separate systems for Voice and Text
- Separate reports for voice and text
- New screen for Text calls
- New training
- Adds Possible Cyber Security Exposure
Integrated (CPE and/or CAD)

- Ultimate NextGen 9-1-1 i3 Solution
- User interface similar to TTY
- Simple PSAP training / low transition effort
- Integrated work flow with voice calls
- Integrated reports and record management
- CAD integration being developed by major CAD vendors
- Dedicated, Secure NextGen Network
- Does not impact voice trunk capacity
Future Technologies

MMES – Multimedia Messaging Emergency Services

- IMS – IP Multimedia (LTE)
- Text
- Real Time Text
- Pictures
- Video
- Carrier provided location (Same used for VoLTE)

Over the Top Applications (OTT)

- Independent of carrier
- OTT provider must verify identity of user
- Must trust OTT provider for validity of subscriber
- Apple iMessage, Blackberry Messenger
- Application must provide location
- Works across multiple platforms and carriers
- Supports roaming
- Could provide additional information from user
  - Medical, contacts, addresses, breadcrumbing, etc.
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I need the police. A man just broke into my house. I am in a closet.

Carrier: Hawaii Cellular
Cell Address: 123 Main Street, Kauai
Cell X/Y: 22.08N 159.5W
Cell Uncertainty: 1609
PSAP: Kauai Police
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This is 9-1-1 What is your exact location

332 Emi road, Koloa
I am hiding in the master closet. Please hurry
I need the police. A man just broke into my house. I am in a closet.

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I am hiding in the master closet. Please hurry

The Police are on the way. Stay hidden.
Questions to Ask

- Will the solution provide aggregation from ALL wireless carriers or will I need a different solution for each carrier?
- What is the system availability of the solution?
- What are the network connectivity options for the solution?
- Does the solution support a transition to a full i3 solution as we deploy a local ESI.net with all of its components?
- How do I get transcripts of text calls off of the system?
- Can I transfer calls to other solutions?
Deployment Process

1. Decide on deployment timeline
   1. Deploy now as carriers come online and announce to public
   2. Soft launch / slow ramp – deploy now but announce when all carriers are online
      - Over 2 million SMS to 9-1-1 attempts / year occur today.
   3. Wait for all carriers to come online in May 2014.

2. Choose initial technology
   1. Integrated with CPE
   2. i3 Based WEB
   3. TCC based WEB
   4. SMS to TTY

3. Request service from Wireless Carriers
Questions

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