TEXT TO 9-1-1? SURE!

TONI DUNNE

Toni Dunne: Thank you for inviting me to give you some information today about text-to-911. There are over 6,000 public safety access points (PSAPs), that's 9-1-1 centers, all over the United States alone. Each year, 9-1-1 centers answer over 260 million calls. They are by law required, as you know to provide direct access to people who use TTY equipment, but things are changing in our world. That's what we're going to talk about today.

We'll just briefly talk about the evolution of 9-1-1, what the public expectations are and what we are going to see in the future, specifically SMS text on our SmartPhones to 9-1-1. I'll briefly talk about what's the status of the FCC mandates or rulings and what PSAPs will have to do in order to receive calls from us when we're using our SmartPhones' text service.

Back when people made connections for us instead of software equipment doing that, they dialed "O" for operator. The operator would connect a person to the police department. The very first communication center just had a telephone in it. If a telephone number was delivered to the center, it was called ANI on a stick, which was basically one little screen displaying the telephone number of whomever had called that agency.

The first 9-1-1 call was made in 1968 in Haleyville, Alabama when 9-1-1 started being implemented across the United States. By 1980, the communication equipment had changed a little bit. There were consoles then with a timestamp so whenever a call came in, an operator would write what type of call it was on a card and clock it to keep current with when certain things were happening. The card went into a tray that moved the card around the room to the dispatcher who picked up the card. That way the dispatcher knew his officer across the room was going to make the call back.

Then, we move up to 1992 after the ADA passed a mandate from the Department of Justice. In that year, we were able to have direct access to 9-1-1. Today a communication center is made up of computers with integrated telephone software. Over the years, we have worked with all of the industry partners to have what we need in 9-1-1.

We also have a lot of diversity in 9-1-1 centers, depending on the population of the areas they serve. While everything is changing in the 9-1-1 industry, the public needs are also changing. Unfortunately, the public needs change much quicker than what we can get changed in the 9-1-1 centers. Since the public funds 9-1-1, we have a problem with some states holding funds back and not allowing for 9-1-1 upgrades. Some states are actually diverting funds that were collected from citizens and allowing those funds be used for other purposes than 9-1-1 service delivery for people who are deaf and hard of hearing. Also, some

rural areas just are not able to keep up with the amount of money they need to upgrade because their population is not very large. Some states have statewide agencies that deal with their state 9-1-1 centers and other states don't have an oversight agency.

Nevertheless, the public's expectation today is that we need 9-1-1 to useable on the equipment we have today. What a lot of folks have are SmartPhones. We actually know that more than 4 billion texts are sent everyday. These are just your normal texting, back and forth, you know – "what do you want to have for dinner?" kind of texts. When we realized the extent of this texting traffic and we didn't have any way in 9-1-1 to receive a text, we started looking at this.

The National Emergency Number Association, NENA, has a vision. It is the only organization that is strictly for 9-1-1 professionals. NENA'S vision is to have a fully evolved and fully functional next generation 9-1-1 system that's accessible any time, anywhere and from anyplace -- and from any device. So they started pulling public safety volunteers together to start working on this issue. We actually have a plan in place for next generation 9-1-1, called NG-911. NG-911 is a reversed initiative and aimed at updating a 9-1-1 service infrastructure in the United States as well as Canada. The purpose is to improve our systems so that we are more responsive to our citizens' needs.

Our 45-year-old system needs to be upgraded. NG-911 is going to do that. Already we have some states starting the process. I will share with you what is involved in making those changes.

So, what are the components to a next gen system? We have to upgrade our equipment. By the way, a next gen system is IP-based, Internet provider based. Communication is moving away from camera trunks, analogue trunks, and going into the cloud. In order to do that, we need to design a network that is not on the public network in the cloud, but is removed and private. It's a private public safety network so that it can be secure. We need to upgrade our equipment to be IP capable and our networks need to be IP networks. We also need to run this network over an ESInet, emergency service intranet network.

Because of ESInet , we have the capability now. If we move things to the cloud, we have redundancies like we've never had before. We have jurisdictional boundaries where many agencies cannot make a transferred call from one jurisdiction to another. With an IP system, we have everybody moving in that direction.

We also have GIS, graphical information systems that are your mapping systems. We have to change our graphical information systems to match what we need with an IP-based solution. We do have maps in 9-1-1 today and they are LAT-long (latitude-longitude) coordinated with the telephone information if you are in your house. If you are calling from a wireless phone, it will also give a Lat-long on your location. Our next gen system has to improve so that we can use this

location information no matter what device you are using. We need IP involved because we need to make sure some security issues are covered. Hiring and staffing will be changing because once we get an IP next gen system, we will have more capabilities and more data coming to the call-takers. Call-takers will have to be trained to be able to handle all of these new methods of receiving information. Right now I may be able to transfer a call, but I might not be able to transfer all of the information that I put in my computer-aided dispatch, my CAD system. Also, I might not be able to transfer that call to the next agency, the responding agency. I may only be able to transfer the caller. So with an IP system, we'll be able to move that data over that ESInet a lot more.

Next, let's look at multimedia, as in photographs. Nine-1-1 may ask you to send a photograph. But they have to have the capability first; I don't think you can do it yet.

Let's talk about videos and cell phones. You may be using FaceTime to call 9-1-1, and maybe 9-1-1 will have the ability to have FaceTime with you. Another initiative has been proposed which is using a Relay Center strictly designated a for 9-1-1 calls. If this goes into place, 9-1-1 needs to be capable of accepting that video feed from the relay center so that they can see you, you can see them, and all the information being shared back and forth.

We may be seeing security cameras having real-time feeds into 9-1-1. We already have alarm systems that sometimes ring in the 9-1-1 center. Sometimes they ring in other locations and notify 9-1-1. Sensors? Sometimes you can see sensors on a bridge. They may actually send a data to 9-1-1 indicating saying there is water on the road on this bridge. This helps responders to be prepared to block off the road if necessary.

Personal medical information might be coming. If you are wearing some sort of device that alerts when you fall, that alert might go automatically to 9-1-1, or it may go to an agency that refers that information over.
We have telematics capability today, but it will be enhanced. If your car has the telematics capability and you are in an accident, it can send the data to 9-1-1 as opposed to OnStar or a call center and then to 9-1-1. It may go to 9-1-1 direct.

And then last but definitely not least is text. Whenever I say text, I am talking about SMS text. When you send a picture to your friend through your text app, it actually doesn't stay in SMS format. It changes to MM. So it's a multimedia message that is going with your picture. What we're talking about today is only text and not pictures. It's SMS and it's going through a network. So the first step for all 9-1-1 centers to move toward in the next gen 9-1-1 system is to just start receiving text.

Why do we need text? Well, in this room, we all know why we need text. But there are other reasons that people need text to 9-1-1 as well. When abduction

happens, someone may be able to text as opposed to using voice that may alert the abductor. A victim could use text and be safer at that moment and hopefully get some help. We know that there are domestic situations where someone needs to not use voice because that could be more detrimental. Texting would allow someone to get a police officer on the way. We also know that in school violence or work violence, text may be a safer option to alert the authorities. Some additional reasons that we need text today are in a disaster where voice lines are down. Data lines tend to stay up and be more serviceable. In Oklahoma City during the last F-5 tornado, the media alerted the public to use text and not use the telephones. That was partly because the data network stayed up, but the voice network was taken out.

We know we need text and my company several years ago realized this and wanted to do something about it. We got some pushback because SMS text was not ever designed for emergency-type communication. The wireless companies that provide text go through a public switch that was not designed for emergencies.
Have you ever texted someone and the text didn't show up for an hour? Maybe it didn't show up at all? I've had that happen. Sometimes I've tried to text but it just won't send. So there are some concerns from the wireless companies that if we open this up for 9-1-1, we are putting ourselves at risk, citizens as well as the responders, and the wireless companies. Therefore, my company, Intrado, decided to design a system we believed would work. We actually installed it in Waterloo, Iowa, where we found one wireless carrier to test it with us. We were able to prove it worked by the way we did our routing path. We took it off the public text network and we moved it down to a private text network. It was a safe, reliable, and secure method of doing so. Following that deployment, we had other 9-1-1 centers becoming a trial or beta site. Several different areas have implemented text on a trial basis and once that trial was over, I don't know of any that have taken it back down. They've left it up.

Black Hawk in Iowa was the first and they've been up for several years now. At first they were only taking calls from one wireless company in that county. Then, they moved into taking all of the text calls for their entire state from that wireless carrier.

One of the fears that we have from the 9-1-1 folks is that they're going to be inundated. They're going to be overwhelmed with text, a new method of communicating. They're not sure how many calls they're going to get for help via text. Through these trials, we've learned that people don't text if they don't need help. The amount of text that Black Hawk, Iowa, received was nominal and didn't impact them. They've also had saves. Once a woman texted because she and her boyfriend were arguing. We don't know whether she was deaf or hearing, but she used text. The couple had a big fight and the boyfriend abducted her baby. She was able to get in touch with 9-1-1 quickly and they were able to locate the boyfriend and retrieve the baby and return him home safely.

Another call that they had was a home invasion. The person hid in the closet, was able to text, and the officers arrived and apprehended the criminals. So we've actually already started seeing people's lives saved because of text going through direct to 9-1-1.

There are three ways to handle 9-1-1 texts. One is a direct IP connection. It's integrated into one's existing telephone equipment. The next is web-based over the Internet, where the text is delivered on a different screen than the call-handling screen. Somebody might be answering calls in one place and then suddenly see a text coming on a different screen and that would be considered a call for services as well. The third way is to convert SMS text to a TTY protocol. We'll look at the pros and cons to each one of these.

We're doing this and we're proving that the possibility exists; that it's reliable, it's safe, and it's something that needs to happen. Consecutively, the FCC established the EAAC, Emergency Access Advisory Committee, to look at the issue of accessibility to 9-1-1. Everybody was in this group: all of the stakeholders and the wireless companies were there. They realized that they really could, after a lot of study, probably do this the way that Intrado said it needed to be done. It needed to be off the public network. However, instead of having the FCC mandate them to provide this access, the big four wireless companies, AT&T, Verizon, T-Mobile® and Sprint® told the FCC, "We'll do it voluntarily."

They put up in their network a message a bounce-back message. If you go home today and text your 9-1-1 center and it is not text capable, you will get a bounce-back message that says, "Your agency does not have text capability. You need to either call 9-1-1, or you need to do something different." They all have this out there now and the wording varies according to the company, but you'll get a bounce-back message.

This coming May, these wireless carriers have promised that they're going to be ready to send text to 9-1-1. That's 1/2 of the picture; the other half is that 9-1-1 needs be able to receive text. They need to decide which of those three ways they're going to receive SMS text into their center.

The Department of Justice has said the wireless companies must provide SMS text access, so things are a little vague. However, the DoJ has sent a letter to the FCC saying that if an agency is providing SMS text access, DoJ believes that is in compliance with the equal direct access mandate. I don't know how it's going to be interpreted at the PSAP site. I will tell you that the National Emergency Number Association, NENA is definitely working with 9-1-1 agencies to make sure that we have all of the solutions, the answers, and resources available for that time.

With Intrado's call-handling equipment, a screen shows a TTY window in the top right quadrant. It will pop open if the call is coming in from a TTY. If you text to a text-capable 9-1-1 center, then that window will open for the SMS text in the same location.

In an integrated system, when the phone rings, you click or push a button and either start talking to somebody, or realize that it's a text-type call and move over into that window and start communicating. So, an SMS contact would ring into an integrated call position. You click the SMS button and the SMS window opens up. It's integrated into the overall call-handling process. All calls will all be reported. It has all of the features, bells, and whistles that a voice call would have. You have that capability.

The web-based system, we at Intrado view as a transitional approach. We believe the integrated system is the better. It doesn't look or feel different to the user or require different actions. The web-based system is definitely viable, and we're going to see that in 9-1-1 centers because that's for them. The easier way to go is to add another computer, add an IP-connection, and receive text through the web-based browser. It allows for quick implementation.

An integrated system doesn't impact trunk capacity, meaning that if I am a call-taker on an integrated system, I am going to be able to answer calls and then move over to text and I am actually focused on whatever calls I have open in that time.

On the web-based system, I may be answering calls, but I will have to swivel over to answer a text as well. It's not going to be as compact and integrated as the other. So we call that "a swivel chair approach." Also, in a web-based system, it's going to be separate from the call system. Therefore, it's not going to be integrated into reports or any type of recordings with the call handling equipment. It will be completely separate. This system will either go on a private IP network or depending upon what the agency decides, it could actually reside on a public IP network

The last method is to convert to a TTY protocol. There are pros and cons to this one as well. The pro to this is that every 9-1-1 center in the U.S. is supposed to have TTYs today. Also the majority of the 9-1-1 centers today have an integrated system so it's not a stand-alone TTY. If they were to accept this method, they would already have it. They wouldn't have to upgrade their 9-1-1 equipment. They wouldn't have to change anything. It sounds good and it is good, for now. We wouldn't want the 9-1-1 center to get stuck in that mode with the TTY transmission rate. With TTY, everything is 1960s. We're trying to move to the next generation. This is fine to have them accept it this way initially, but we still want them to move into the next gen 9-1-1 system eventually. And there are concerns with this. Any time that you translate protocols you risk characters. TTY

characters are already at risk of being dropped. When you translate from SMS to TTY, you risk more translation issues. And it is slow.

The last type of connectivity I wanted to just throw at you is the apps available today on our SmartPhones. A lot of them are public safety-type apps. However, beware buyer because these apps often advertise they will connect you to 9-1-1. You need to do some research because today 9-1-1 is not accepting any contact from an app. Eventually, if you put personal medical information in your app and then you need 9-1-1, you will be able to send your personal medical information to 9-1-1. They'll have it ready for when they respond. Just be aware 9-1-1 is not taking apps right now.

I just want to talk quickly about your wireless carrier. When your SMS message goes to a center's tower, it has to be routed to a text control center to know which 9-1-1 center it goes to. One of the concerns that the wireless company expressed, and 9-1-1 has expressed, is that we're not going to get location through a text message. Well, we're working with that. We are going to eventually see some sort of location identified with your text message when we receive it at 9-1-1.

There are challenges to implementing next gen as I mentioned earlier: the funding. There are also legislation and policy changes that need to be addressed in order to switch from analog to IP-type systems. There are standards that need to be looked at, along with technology development. There are operational issues and modifications needed, and we need to make sure that we are bringing a lot more people to the table in our discussions and planning than we ever did before because IP means the world is opened.

This will not happen concurrently across the country and not every agency's going to take pictures, videos, the multimedia right away. Some agencies will pick and choose what they'll accept for their next gen system. They are going to have a transition plan.

We will need to educate the public. Some efforts going on and I will open up the floor in a minute to hear more about some other efforts. One of the campaigns we have looked at is "Call when you can, text if you can't." That is to help people who are hearing know when to and when not to text because we don't want hearing people texting if they don't need to. We want to leave those paths open for people who actually do need to be able to text. By the way, "Practice safe text." "Don't text and drive."

We have a group that is looking at abbreviations within NENA and writing an information document. These are just some funny abbreviations. But any abbreviations can be confusing, so NENA recommends don't abbreviate when you are trying to contact 9-1-1.

You have resources available to you and to everyone. NENA is a resource (NENA.org). Within NENA's website, you can find informational documents and information about the standards. NENA recently put out two documents for 9-1-1 centers.

What I would like to say is that you need to be your own advocates. We need you to outreach to your 9-1-1 centers and let them know that you need to have text-to-911 as soon as possible. Help them understand, too because they may not understand all of the options that they have. They need to pick at least one of those options, right?

What I am asking of this group is to advocate. I am an advocate for you. Intrado is an advocate for you. We have people in 9-1-1 who are advocates. We need people who are deaf and hard of hearing in local jurisdictions to stand up and speak out.

Audience member: You've got a lot of good information about what to do and what not to do. If you text-to-911, and you get that message back, you have to call. You are supposed to tell them where your location is or what?
Toni Dunne: The first thing that you need to give 9-1-1 is your location, absolutely. Then say what's wrong, so they can know where you are and what help to send in case there is a disconnect from your conversation. When you call 9-1-1 today, it may say "9-1-1, what's your emergency?" Some agencies say, "9-1-1, where is your emergency?" There is no standard out there yet, but where and what are the two pieces of information they need.

Audience member: My understanding currently is that the technology can guide you to the building itself, but it won't tell you which room or floor of the building you are in.
Toni Dunne: That is correct. They're working on the location in the format they call Z. It is not available yet and it won't readily be available everywhere. So definitely we need to know where you are in that building
Audience member: Back in my hearing days, I used to be a dispatcher. Regardless of whether it's a voice call to 9-1-1, or text, it is imperative to a dispatcher to know what your location is. If you are in a 10-story building or bigger, the dispatcher will ask you where you are and verify which room you are in and things like that. The locater thing is something that we're working on improving, and Toni is definitely instrumental in that. But a dispatcher, a real person, will always ask you exactly where you are.

Audience member: I have two questions that are related to each other. The first question is if you have a person who can't speak for themselves or can't text and they are in an emergency situation, in shock or something like a kidnapping situation, or otherwise, do we have anything setup for that? Such as a panic button on the cell phone, or any other way that could inform 9-1-1 of the location of the individual if they weren't able?

Toni Dunne: I always suggest that if you can make the 9-1-1 call but you can't text or use your voice, just leave the line open. Nine-1-1 will do everything that they can to locate you. If it's a wireless phone, they're getting a Lat-long on your location within a certain degree. It might not be exactly where you are, but they'll have some idea and they will do everything that they can to find you. If that line is open, they're listening, trying to determine by what's in the background what's going on. Is it a problem? Are the kids playing on the phone and they're laughing? You know, they're listening to that, and if they feel that there is something not right here, they're going to respond. They're going to try to send somebody to find you.

Audience member: I'm Jan Withers and I am the director of Deaf Services at the North Carolina Services for the Deaf and Hard of Hearing. We've been working on national advocating campaigns regarding this particular issue. This last June, we all went to the NENA conference. Donna Platte who is actively involved with the federal organization sent one of the two co-chairs of the accessibility commission to this conference. I think that the conference was three days in total. One day was focused specifically on accessibility. One of the things that they discussed as their priority was text messages to 9-1-1. At that coalition meeting, they were developed to educate on the national level about text-to-911 and the need for it. The 9-1-1 organization planned to do some advertising starting in January through April educating on the national level about text-to-911.

They have two other deaf people involved with that coalition, Cheryl and me. Susan is also working with the FCC. We plan to develop a way to reach out to people in order to get other organizations and agencies on board as well. It's wonderful to increase the awareness and education so that people know who is in charge of the 9-1-1 system in their particular area. Is it the sheriff's department? Is it the city? Is it their council? Is it the mayor? People need to know and research in their area to find out who that would be.

There are going to be the people who are setting up the text-to-911 system in your area. Where I live, in Durham, North Carolina, it's been very successful.

Audience Member: I have some concerns about time required to text 911. And I don't know how long it's going to take if these resources are going to be slow or if we're going to be having messages that are missed. What would happen if something like that came up in a 9-1-1 situation?

Toni Dunne: When you text to 9-1-1, it goes to the SMSC, which is the text central office. When that office sees that it's a 9-1-1 text message, it moves it out of all of the other text messages that are not emergencies and it moves it down a pipe so that it can get immediate attention. It's not backed up and slowed down by a ton of other messages in front of you.

Audience member: What if a person had an emergency situation come up and had a mobile disability? What if a person has a hard time typing out the message? It takes time to type and then that becomes an issue as well.

Toni Dunne: I understand. So if you can, get a call to 9-1-1. They should not be hanging up on an active call. If they know that someone is there needing help, they see maybe one letter and then another letter, it's not fast but they're seeing something coming across their screen, they know that they have someone that needs help. Depending upon the agency, they may go ahead and send somebody.

Audience member: Thank you. So that's one of the challenges that we'll have to deal with; it's one of those issues.

Audience member: I wanted to ask about the voluntary deadlines of the four major carriers, and just make sure that I am clear on it. One already passed earlier in the summer, the bounce-back message that's probably working in most cases, cross our fingers, for the whole country. Then in March or May of 2014 the four major carriers say that they will be able to provide text-to-911. That is half the battle. The other half of the battle is that PSAPs have to be able to accept the 9-1-1 calls and know what to do with it. That's where your company, Intrado, comes in and can help with the software setup and things like. Is that right?

Toni Dunne: Other companies are also actively involved in providing text capability to 9-1-1. It's not just Intrado anymore.

Audience member: My second question is related to the bounce-back message. Is there any proposed rulemaking as far as a language used in the bounce-back message? The first I went to my county 9-1-1 center and worked with our team. We tested for the four major carriers, we did a 9-1-1 call from the center, and the bounce-back message we got from all carriers was great, instantaneous. However, I would change the language and the words that they used. Has there been any discussion as far as what words they should use?

Toni: Yes but the carriers don't agree. In north Texas, we had a meeting of consumers to develop the language everyone felt would be good, understandable language. The next day at a meeting with the carriers, we presented what was requested from the users and everyone at the table said, "I'm not going to promise that." At the wireless carrier level there are I attorneys, and when you get the attorneys involved, they have different ideas about what is allowed to be said. That's why it's different from different carriers. If you feel like the message is not an appropriate, I would recommend you actually contact those carriers to let them know at the grassroots that their message is not going to be understood.

Audience member: I am with AT&T. If you don't like our message, send me an e-mail. My e-mail address is Susan.Mazrui@ATT.com. I am not sure that I can convince lawyers to do something different, but I can certainly annoy them.

Audience member: I am the director of the Rhode Island Commission for the Deaf and Hard of Hearing. I am involved with the emergency preparedness and management association in Rhode Island. I talked to the 9-1-1 center about having the emergency text-to-911, and they said they're concerned about funding and they're also concerned about lack of standardization of software. They have software and other states have different software. Do you have some kind of software standards, or some kind of federal standards for developing the software, or is there no such thing and it's just company-owned software?

Toni Dunne: NENA has developed CPE standards for 9-1-1, which is your equipment and software in standards. So you go to NENA.org, and you can look at the standards options there and you can find those standards. So, yes, there are standards. They are de facto standards because NENA has no authority to actually require, but NENA is looked at as an authority organization.

Audience member: Can you give me or share the cost for adding this software into our system, integrating it into our system? The 9-1-1 center keeps saying that it's so expensive, it's so expensive, but is it really expensive? Jan Withers from North Carolina, and other people in the audience would like to know, what's the range? Can you tell us?
Toni: I don't have that, but I can help you with that online.

Audience member: When I, as a deaf person, am using text-to-911, do I just dial 9-1-1? Will it go through the most appropriate PSAP? Or do I have to know their 10-digit number to do an SMS?

Toni Dunne: That question is about one of the battles that we have been addressing. The wireless companies had originally only setup a 5- or 6-digit number to be able to use text for. Of course, 9-1-1 being 3 digits requires the centers to make a change their system, to recognize 3 digits for 9-1-1, so you will be able to use just 9-1-1.
Audience member: So it will go to the most appropriate center because of my location even if my phone is not on GPS?
Toni Dune: It will be based off the tower that you are closest to, for now. When we get to a location that is not that far off to come with your SMS text, then we'll be able to route it more accurately. But for now, it's going to be sent to the tower with what they believe is the PSAP for your tower.

Audience Member: I really appreciate you coming, Toni. It was fabulous information.

Toni Dunne: Well, thank you!

Toni Dunne is a certified Emergency Number Professional (ENP) with over 23 years experience within the public safety industry.