THE BROOKINGS INSTITUTION

MOBILE TECHNOLOGY'S ROLE IN NATURAL DISASTERS

AND PUBLIC SAFETY PREPAREDNESS AND RESPONSE

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P R O C E E D I N G S

MR. WEST: Good afternoon, I'm Darrell West, vice-president of

Governance Studies at the Brookings Institution and director of our Center for

Technology Innovation. I'd like to welcome you to our forum today on mobile

technology's role in natural disasters and public safety, and we are webcasting this event

live, so a warm welcome to our viewers from around the country and around the world.

I'd like to welcome our special delegation from FEMA. We have a

number of people here from that agency, so thank you for coming out. You can take

good notes and take back any lessons for your agency.

We will be archiving this event through brookings.edu, so anyone who

wishes to view the discussion after today, you can find the video there. We also welcome

your questions and comments. We've set up a Twitter feed at #TechCTI, that's

#TechCTI, so if you wish to post comments during the forum, you can do so, and

sometimes we have a very active and vibrant discussion online to go along with the

discussion we're having in the auditorium.

So, in recent years, mobile technology has expanded dramatically

around the world. According to a Cisco Visual Networking Index, global mobile data

traffic has doubled for the fourth consecutive year, and by the end of 2016, it is estimated

that 10 billion mobile devices are projected to be in use around the world.

We are seeing many global threats due to natural disasters, terrorist

activities, criminal actions, and other types of things, and mobile devices, such as smart

phones and tablets, have enabled emergency providers and the general public to learn

how to manage some of these challenges.

In conjunction with today's event, we are releasing a new paper entitled

"How Mobile Devices are Transforming Disaster Relief and Public Safety." This is a

paper coauthored with Liz Valentini. Copies of the paper are out in the hallway or are available online at Brookings.edu. And the paper looks at how mobile devices assist with public safety, disaster planning, as well as crisis response. In particular, it looks at the ways in which mobile devices have helped saved lives and ameliorated human suffering around the world. It provides a new means for quick and effective communications during times of natural disaster.

And this event is part of our mobile economy project, and we appreciate the generous financial support provided by Qualcomm for our work in this area, and this is a three-year project that looks at how mobile technology affects a variety of areas, including education, healthcare, public safety, and entrepreneurship.

Today we have a number of distinguished guests to help us understand this topic. Richard Price is the president of PulsePoint Foundation, which is a nonprofit organization established to guide, enhance, and expand the reach of the PulsePoint CPR AED notification app. He retired as the fire chief for San Roman Valley Fire Protection District at the end of 2012 after a distinguished 33-year service in the fire department.

Chief Price has a strong technical background and is well known for using technology to shape management processes and encourage civic engagement.

Suzy DeFrancis is the chief public affairs officer for the American Red Cross. In this role she oversees all of the enterprise-wide communications, government relations, and strategic partnerships to advance the mission of the American Red Cross.

Previously, she served as assistant secretary for public affairs at the U.S. Department of Health and Human Services, and prior to that she served in the White House as Deputy Assistant to the President for Communications.

Admiral James Barnett is co-chair of Venable's Telecommunications Group and a partner in the firm

Cybersecurity Practice. He has over 30 years of service in the U.S. Navy and the Navy

Reserve. He served as a chief of public safety and the Homeland Security Bureau of the

FCC where he worked on cyber security initiatives.

Kristina Anderson is a cofounder and chief evangelist of LiveSave, which

is a leading mobile application for sharing and reporting public safety information. She's

become an advocate for improving campus safety and violence prevention since

becoming one of the most critically injured survivors of the Virginia Tech shooting

tragedy, which is one of the worst school shootings committed by a single person in the

United States.

In 2007, she was shot three times while attending a French class, and so

since then, she has started LiveSafe and has the mission of increasing awareness and

improving overall community safety through technology and individual empowerment.

To my immediate left, we have an empty seat, which we're saving for

Anita Stewart, who currently is experiencing a flight delay. We're hoping that her flight is

able to take off and she is able to join us. She is the senior vice-president of strategic

partnerships for Sesame Workshop. She joined the Workshop in 2003 and she's

responsible for developing the strategic alliances for the Workshop's signature children's

series *Sesame Street* and *The Electric Company.*

So, I'm going to start with Suzy. So, at the Red Cross you are using

mobile technology and social media in regard to disaster response. So, what are you

seeing in terms of how these technologies are helping you manage where people are

finding needs and where damage is occurring?

MS. DeFRANCIS: Well, thank you, Darrell, and thank you to the

Brookings Institution and the Center for hosting this and for all of you for being here.

Well, the American Red Cross has jumped in big time into the whole

social media, new technology area and we were going that -- and you may wonder,

what's a 130-year-old institution like the American Red Cross doing in the new world of

mobile technology, but we are seeing it literally revolutionize disaster response, and we

feel it's very important that we be engaged and listening to social media and using all the

new technology as a way to involve more people in our mission and also to serve the

people that we're trying to help.

So, we first saw the power of social media during the earthquake in Haiti

in January of 2010, and what was very heartbreaking about it is that people were actually

Tweeting or using some form of text or something underneath the rubble asking for help

to be found, or they might be Tweeting a relative here in the United States and the

relative would go -- they knew we were on Twitter, the Red Cross, and they would send

us the Tweet saying, can you help? And at that point, we just were not prepared to

handle these kinds of requests. We had to take them manually and get them a hold of

somebody at the State Department who could then get a hold of the response there in

Haiti. There was no real 9-1-1 in Haiti to get to, and so we were just overwhelmed by the

power of what was happening here and decided that we had to get involved in this in a

big way, that this was the way people were starting to communicate, and if they're going

to communicate that way on a daily basis, they're going to communicate that way in a

crisis.

So, we actually had a summit in August of 2010 where we brought

together a lot of our partners, like FEMA, and others and of course the technology

companies -- Google, Facebook, Twitter -- all get together to talk about this phenomenon

of emergency social data and what do we do with it when there's a crisis. And this led to

a report that we produced, which is on our website, which you can find, but it also got us

thinking about how do we operationalize social media, how do we really get ourselves in

a position where we can analyze tens of thousands, even hundreds of thousands of social data and figure out a way to use that in our operations.

And with the help of a great partner, Dell, who had built for them, Dell, a social media center in order to follow their customers and what their customers' needs were, Dell came to the American Red Cross here in Washington, D.C. at our National Disaster Headquarters, and built for us the first digital operations center, the first social media center, if you will, that's dedicated solely to humanitarian relief. They gave us the hardware, the software, the expertise to do this.

So, I invite any of you to come visit our digital operations center, which is right over here at 2025 E Street, and what you'll see when you get in there is a way to visualize what's happening on social media during a disaster, and what is it telling us. We have four screens that you'll be able to see, one is our heat map, that is a geographic map of the world, as well as of our country, and you can see instantly when a disaster is bearing down on a certain community the amount of social data that's all of the sudden being produced by people who are, you know, Tweeting, hey, tornado's coming, take cover, you know, did you know that this was happening, and you can literally see a state like Texas go red when a tornado, a year ago, went into the Arlington area of Dallas.

So, we get a sense right away. We used to go to CNN to find that, now we can see it right on the map as people begin to talk about what's happening.

The second screen you'll see is we can tell what they're talking about. Are they looking for first aid tips, preparedness tips, do they need food, do they need water, do they need shelter, and we can see those needs arising and we can categorize them and get them to the proper operations people who can look into it.

We can see who are the prominent people out there on social media. As many of you may know, in a disaster, people spring up almost organically from the

community and begin to organize, you know, hey, somebody needs diapers over here,

can somebody get them this, and we begin to follow these people because they're

becoming part of the response too.

And finally we can see, on another screen, kind of what's the sentiment

and how are people feeling about what's going on, are they getting help, are they not

getting help, and then we can adjust our operations.

So, we've been using this tool since 2012, but during the Hurricane

Sandy we really saw the power of it. As you all remember, Sandy was an enormous

destruction throughout the East Coast and into New Jersey and New York specifically.

During that time, we were able to analyze 2.5 million pieces of social data that was

occurring during that time. We were able to tag about 10,000 posts, it could be anything

from tagging it as situational awareness, this is telling us something about what's going

on on the ground, or it could be need for food, need for water.

We were able to respond, personally, from our digital operations center,

to 2,500 of those posts, and we were able to take action on 300 of them. In other words,

we could tell that, gee, they had a need at this particular area of the response that we

weren't getting to. So, for instance, people got on Facebook in Sera Vera New Jersey,

they said we've been here five days, we've not seen the Red Cross. Well, we wouldn't

have known that without social media, so we were able to immediately get that

information to our operations people and get some service delivery going in an area that

needed it.

People were helping us Tweet out where our food trucks were. So,

they'd say, what can we do to help? We'd say, well, we're sending a truck to 99th and

101st on Howard Beach and we're serving Salisbury steak today. Would you Tweet that

out so people know where it is? And all of the sudden, people were really getting

involved in our response.

Now, how did we scale up at a time like this? Because we usually get maybe 4,000 or 5,000 Tweets a day about Red Cross, but during this period we were getting tens of thousands, even hundreds. We had digital volunteers that we have trained and they can work remotely. They don't have to be in our digital operations center. We had one guy from the German Red Cross working out of Germany, and we empower them to respond to these people for us. We give them the information they need to have to be able to tell people where the shelters are, where they can get help.

And so, we're really involving a whole other level of volunteers at the American Red Cross and they're digital volunteers. Now, none of this can replace the volunteers we have to have on the ground to actually deliver the 17 million meals and snacks that we did during Sandy, but we are seeing online become a tremendous part of disaster response.

And the only other thing I wanted to mention was that we're also seeing mobile apps playing a huge role in getting people information they need in an emergency. I was telling someone, we used to put the information you'd need to know in an earthquake on something like this. Well, when you're in the middle of an earthquake, you're probably not pulling this out or reading it. So, we found through mobile apps that you can have something just in the palm of somebody's hand, we have an earthquake app, you can pop on it, it will tell you 1-2-3, here's what you have to do, and before, during and after, and we've got first aid on there, we've got a hurricane app, a wildfire app, all these apps, and we're hearing from people now that they're literally helping them to save lives in an instant, right in the palm of their hands.

So, it's just amazing to us how mobile technology is really not only improving disaster response, getting more people involved in the response, but it's

literally saving lives.

MR. WEST: Thank you. So, Richard, you have been a fire chief and now you have a foundation, PulsePoint, that has a new app on CPR, and he was mentioning earlier, only 25 percent of people actually know CPR -- I hope I have that number right -- which is kind of low given the years that we've been trying to teach people that.

So, can you tell us about your app and the role that it plays in emergency response?

MR. PRICE: Thank you, Darrell. Suzy is so good. She's such a hard act to follow. A Salisbury steak hashtag probably a first.

My story begins in a deli as a fire chief hearing a siren in the distance wondering where that crew was going, seeing them kind of pass in front of the road where the deli was and pull into the parking lot and, to my surprise, pull up right in front of that deli where I was eating with the lights and siren. As a fire chief in town, being surprised by an ambulance from your own agency is not good. You know, if that had been a fire or something, I would have gotten a phone call, but I'm sitting in that deli, in uniform, essentially on duty, not plugged into medical calls that are happening up and down the district all day long, not listening to the radio like a fire crew would be. But right next door, somebody had had a cardiac arrest, was lying their unconscious just on the other side of the wall of where I was sitting.

I obviously know CPR as the fire chief, have an AED in -- I mean, a defibrillator in my car, and likely could have made a big difference in that outcome if I just would have known, so close.

That was sort of the genesis of our idea, the ability to crowd source good Samaritans, CPR-trained citizens, at the exact time that they were needed. You know,

that statistic is only 25 percent of the time when paramedics arrive on scene is CPR in progress, you know, only one out of four times, and we've been teaching CPR in the United States for more than 50 years, and AED is the public access defibrillator, it's the one that you see in public spaces like this and the airports and things. Those are only retrieved 1, 2, 3 percent of the time by bystanders, people simply don't think about them and don't know where to find them.

So, what our application allows a community to do is to notify CPR-trained citizens who are nearby simultaneously with the dispatch of the community resources. So, if somebody calls 9-1-1, reports somebody unconscious, unresponsive, likely needing CPR, traditional resources are dispatched and then our software running in the center will look, are there any CPR-trained citizens that are essentially within walking distance, maybe a quarter mile, like a running track distance around that reported location, and we notify those people. They get a push notification that says CPR is needed, the name of the location, where they're at, the common place name, the business name, and the address, and then we give them a map, we show them where they are, where that patient is reported to be, and we show them where the nearby public access defibrillators are so they can begin CPR and retrieve an AED while the crews are still in route.

Now, that seems like, you know, a revolutionary concept, but we have that concept today around fire extinguishers and fires. If there's a fire in this building and in this room, we're in the best position to extinguish that fire, to grab a fire extinguisher and to extinguish that fire while it's small, while it's in its early stages in the first few minutes. We're in a far better position to change the outcome than the fire department is that's five miles away. You know, by the time they get here, that fire is larger, the room is involved, and if they take too long to arrive, then the whole building is at risk.

With cardiac arrest, minutes really matter. If somebody has cardiac arrest and their heart stops, they only have about ten minutes to survive and brain damage starts to begin earlier than that. So, getting CPR started faster, within the first few minutes, and getting an AED deployed in the first few minutes, can save hundreds of people every day. A thousand people a day die from cardiac arrest in the United States, so annually it's more than a million people worldwide. So, this is a significant problem, but we can make a major difference with an application like this. We train people in CPR, we place the AEDs out there, but it requires a lot of fate. People have to be in the exact right place at the exact right time to make a difference, there has to be a witnessed arrest.

What the application does is it kind of redefines what it means to be a witnessed arrest. You only have to be nearby now, not at the exact right place at the exact right time, so the odds are much greater. You think about a community that has 10 or 20 fire stations, in those kind of communities we have thousands of CPR-trained citizens that are carrying the app and are the army for CPR in that community, so we alert that one fire station, but we alert four, five, six, seven CPR-trained citizens that are in the immediate vicinity to begin, and our statistics are very good. We're seeing our citizens respond, we're seeing them begin CPR, we're seeing them source the AEDs.

We had an incident recently where an off-duty nurse was notified and responded. A large percentage of our users are actually off-duty professionals. We had another incident where we had eight people respond. So, when our crews arrived on scene, the paramedics arrived on scene, they had people doing CPR, rotating into assistant CPR -- CPR is very physically demanding, so having more than one person makes a big difference -- and people actually clapping to 100 beats a minute encouraging the other rescuers.

So, it's a very different scene to come on to compared to, you know, one out of four times, to have actually eight people there, and people have more courage when they're with other people. You know, if you respond -- CPR takes a lot of courage, a lot of bravery, but when you have, you know, six, seven people with you, all there for the same reason, it's easier and the outcome is much better.

Thank you, Darrell.

MR. WEST: Okay. Jamie, so both Suzy and Richard have talked about the importance of communications. You work on public safety communication. So, what is the state of safety communications today?

MR. BARNETT: Darrell, thanks. It's a great question, I'll be glad to talk about that. I would say Suzy talked about Salisbury steak and the chief had a deli, I don't have a food reference to start off with. I apologize. I'll buy people a scone or something later on.

So, as Darrell told you, I was the chief of the public safety in the Homeland Security Bureau at the Federal Communications Commission. While I was there I came to think of public safety communications as a triangle, and I'll tell you the three things -- the three sides of that triangle, but all of that, all the stuff that we've been talking about, is occurring during a tremendous technology transition, and that transition is from the way that we communicated before, which is primarily even our wireless calls were circuit-switched, basically the old police and fire communications and most of our other things were legacy communications of copper wire, and that's going to be around for a while, but there's a transition that's going on that we need to understand with regard to public safety communications, and that transition needs to occur in an open, transparent, and inclusive manner, and legacy communications will be around for a long time, I think, and the DoD has said that they're interested in that, but it does need to be

an inclusive and open discussion.

So, the three legs, the three sides of the triangle are -- the first one is the government's ability to inform you that you're in danger so you can do something about it, and that's the public alerting side of it. And there are several developments on that that have occurred.

The second side, I would say, is your ability to tell the government that you've got a problem so you can get help, so that's the 9-1-1 side of it. And then the third leg of it is, in essence, public safety's ability to communicate with each other to coordinate that help or the disaster relief, and there's some major developments on that side of it, I would say some of the most incredible ones in the last 60 or 70 years.

I've added to that triangle in the past few months, and really couple years, a third one, and it really goes to what the other panelists are talking about here, and that's the ability for you to tell someone else that they're in danger or them to tell you how to get help, so the whole social media side of it, and yet there is an aspect of where that information needs to be incorporated in overall disaster relief in the way that Suzy was talking about, or whether it's our brethren at FEMA, or whoever is managing the incident to be able to see what's happening along those lines.

So, first, on the alerting side, some of the things that developed -- and I don't know if -- maybe some of you -- if you've got any type of smart phone, you probably have received some type of alert that there's flash flooding in a particular area or there's some type of thunder storm, severe thunder storm, or maybe a tornado, something like that, and that all comes from something called the Commercial Mobile Alert System, or the commercial groups are calling it Wireless Emergency Alerts.

This is actually a complex technology that knows where you are based on the fact that you're communicating with the cell towers all along, and if the local

authorities think that there is a problem with that, they can actually pump it out to you just in that area. It doesn't matter where you live, if you are visiting here from New York, you'll get that alert in that area.

So, that is a major step forward and those are going to continue in the near future. Part of it is teaching the local authorities how to use that best.

Second leg I mentioned was the 9-1-1. The first 9-1-1 call was made in Haleyville, Alabama in 1968. This is a total circuit-switched type of technology and when wireless phones came along, basically what happened is there was technology bolted on that to make it work, because when you picked up the old Ma Bell telephone, the telephone company knew exactly where you were because that's where they sent your bill.

Once you had a wireless phone, you could be anywhere, and so it was amazing technology to be able to find out not only where you are, but where the closest 9-1-1 center was to be able to get help to you so they could dispatch help to you.

Location accuracy becomes a very important aspect of that to make sure that people know where you are, and it's been an increasing problem, particularly because we find out outdoor location actually is fairly easy, GPS is pretty good, there are various technologies that can be used. Once you go indoors, particularly in big buildings, particularly in tall buildings, that becomes a little bit more of a problem. So, if you arrive at the Empire State Building and they say, okay, they're somewhere there, good luck finding them, maybe they can't tell you because they've had a stroke, or there might be some other reason why they can't communicate with you, location actually becomes pretty important.

So, the FCC needs to move forward the with figuring out the technologies for indoor location accuracy, and these are some of the things that I think

you'll see coming along. The other 9-1-1 functions, very recently the FCC adopted a 9-1-1 texting type thing. Unfortunately, at Virginia Tech we saw students who were trying to be quiet, trying to get help, texting to 9-1-1 and at that time, those texts went nowhere.

Now, we're on the road to making sure that those can be received and handled by the 9-1-1 cal centers. The problem, of course, there's still the latency with SMS text technology and so there's some problems with that. We need to move on beyond SMS text to, in essence, next generation 9-1-1, which is truly a packet-switched ability to receive all sorts, so you can take a picture of a fleeing criminal and that can immediately go out to all the law enforcement in the area and they can immediately pick that person up. There are so many things that we'll get from that.

And then on public safety communications, from 9-1-1 to the 9/11 disaster, we saw tremendous problems with interoperability, public safety agencies not being able to talk to each other. We find this in disaster all the time. And the promise of the new Public Safety Broadband Network, which is known as FirstNet, is that because it's, you know, a new technology, it's 4G LTE that's going to be launched across the nation, it's being launched right now, we might be able to achieve the interoperability that we have missed for the last 60 or 70 years with regular police, fire, and emergency medical communications.

The trick is making sure that FirstNet gets it right, and we have a great board that's working on that right now to make sure that it is, and one of the things I would tell them is they need to remember the triangle, that public safety to public safety communications is very important, but also they need to incorporate the alerting and the 9-1-1 end of that.

They also need to remember that sometimes, like in Sandy, networks go down and in that sense, the great spectrum that we have for public safety

communications need to be augmented by satellite backup, which is not going to be

weather-dependent and can move forward in any situation. That includes satellite

alerting, which can be very important, and the other things with regard to public safety

communications I think will be improvement.

And then all public safety agencies -- FEMA, all the -- Craig Fugate has

been a great advocate of making sure that social media is incorporated into our response

to disasters and in any type of public safety incident, he would call this not just a

communications device, he calls it a sensor, and it's for the exact reason that Suzy was

talking, you can tell what's going on from them by what people are saying.

This is the exciting environment that we're in, but we need to be able to

make sure -- we've got the technology now, now we need to make sure that the humans

using it understand it.

MR. WEST: Okay. Kristina, so you were shot at Virginia Tech. You

now work to improve campus safety, so could you talk about your experiences and also

the organization that you have formed?

MS. ANDERSON: Sure. Thank you so much, Darrell, for having me.

You blew the cover of announcing why I was here.

At LiveSafe, we are basically changing the paradigm of campus safety,

and, you know, campus safety has been a very important topic on our minds, I think

probably since Columbine, obviously, but really with Virginia Tech, it highlighted, I think,

in a really dynamic sense, the importance of receiving and sending information in real

time.

And just to share a little bit about my experience from that day, so I was

a sophomore at Virginia Tech. The shooting happened April 16, 2007, so six years ago.

I was sitting in a French classroom, and we had no prior knowledge that a previous

shooting had occurred that morning, but Norris Hall, it's an L-shaped building, it's very

small, it's almost like a little bit of a mansion. We're sitting in class and we hear very loud

noises, like down the hallway, and I'm sitting on the hallway so I kind of feel the intensity,

and we hear sounds. And people say they thought it was construction and all these

things, but personally I knew that it was too loud to be anything -- it was alarming.

Our teacher went to the door, she peered outside, and she immediately

shut the door and she said, "Call 9-1-1". And the second that she had kind of tried to slam

the door, he walked in. And I went to middle school in California where we had, you

know, unannounced tornado drill, so my response and my training went back to, get on

the floor and cover your head.

So, we had like the L-shaped desks that you slide into. I got on the floor.

I put my knees under that chair, stomach on the seat, and just kind of covered hands on

my head, waiting for what to happen. And for the first few minutes I really thought it was

an experiment, a prank maybe, you know, Oprah was going to jump in, and very quickly, I

think, based on the sounds and the noise I was hearing, I could tell that something very

serious was happening.

I looked left as he walked in and I saw just the top of him, he was

wearing a hat and he looked very determined, and I went back and I just covered my face

the entire time.

He didn't say anything, he didn't stop, he just literally shot down the rows

of people, and it got closer and closer and faster and faster, and I remember telling

myself, like, prepare yourself, your turn is going to come. And the first time he shot me

was in the back and he left and in that time we start hearing, you know, a little bit of cell

phones ringing, you know, people are trying to murmur and move, but really we're still

kind of in lockdown mode.

He came back. He came back to our classroom two more times, so all in all, three times, and he shot himself in front of our classroom right as the police broke in.

So, I was shot three times, twice in back and once in the toe, and as we joked earlier, you can't tell now unless I'm in a bikini, but we try to cover that. When the police broke in, there were a couple of things that were going on. A, no one had known about the event that previously had happened, the first shooting on campus. Second of all, people are trying to dial out within Norris Hall, and those communications were going out.

As the police were trying to enter, they also had no idea who the shooter was, where he was, what kind of students were being injured. There was no communication and no, really, situational awareness, essentially, for them to know how to respond. And so it took a lot of time to really sweep the building and create a more efficient response.

And I went back to Virginia Tech. I graduated in 2009, and what was interesting is these events kept happening. I thought after Tech there'd be no other school shootings, essentially, but we had, you know, Helsinki, Northern Illinois, even the Boston bombing touched MIT's campus, and then I start thinking about how can we best impact campus safety.

And so, my cofounder and I became very interested with bystander intervention, essentially. He was working on a previous application that was one-way sending tips to police in D.C., and I learned through a study that it was number four Virginia Tech, in two-thirds of school shootings, two, sometimes three people know about the shooting before it happens, and that to me was very interesting. It showed that these things are not random events. No one wakes up one day and decides to commit a school shooting. People know about it and there's leakage. How do we empower those

people to speak up? Because usually they're their peers, they're their colleagues, and they may be fearful going to adults if they're going to be in trouble or what the repercussions are.

I think we, as individuals, are not always empowered to call 9-1-1. We don't know what the right time is. Is it your responsibility? So, with LiveSafe, we focus on a college campus, we learned 91 percent of adults in the U.S. own a mobile phone. About 60 percent of those are smart phones. On a college campus, I think it's probably even higher. So, instantly mobile technology was a very natural way of reaching students, and so with our app, with LiveSafe, you can submit information directly to law enforcement, and so through the app you can submit a tip or a report, whatever you feel needs to be communicated, and with that, you can add multi-media, so you can add a picture, a video, as well as SMS.

If you want, you can do it anonymously, which is very important to kind of remove that risk of sharing information. Police get it on a dashboard. They have their own web-based dashboard that they receive with your user information, you know, your name, your contacts, emergency notifications, and your location.

So, student engagement and GPS tracking are our main focuses coming out of Virginia Tech on how to improve campus safety, two things that haven't been fully amplified.

So, the purpose of it really is, our goal is to be preventative, it's to create this platform where people feel inspired and empowered to share information to really give law enforcement just more information. They shouldn't be the ones out there, you know, looking for it, they should be the ones to respond, whereas really the people on the ground, you have the best information, how can we get that to you in a better way?

And in terms of emergencies, actual times of response, what we're doing

is we're giving students the option to call the campus police, which often they don't know

the right number to do so, they call the campus police or 9-1-1. What happens instantly

is it initiates distress monitoring. So, on the dashboard, they see where you are. You

pop up as a blue light, and even if you can't communicate, say you are actually trapped in

someone's car or you're being taken away, you can't respond, they are watching you

where you are and it's not turned off until they've located you, which is a really, really

important feature, I think, just for accountability purpose.

We're also enabling social safety maps, so now there's a new place for

conversations around campus safety issues. If there's -- campuses have to file through

Cleary a day log of all the events that have happened. We're putting that on the map

directly to give users a more -- just awareness of what's happening around them.

Parents like that, students like that, and law enforcement likes the interaction with

students and communities as well.

And also alerts emergency contacts. Like we said with Virginia Tech,

being able to -- you know, my phone at the time was not a smart phone. I could not call

my parents, but a lot of people did try to text, and SMS will go through where -- over Wi-

FI, whereas calling won't, so giving people extra ways to communicate and just, you

know, touch and touch base with their loved ones.

So, right now we have been beta testing in over 20 colleges and

universities and we've received just really great feedback from schools and police chiefs,

but really I would encourage your feedback and your advice on the apps. I think what will

really make it -- take it to the next level, is it needs to be user friendly and user engaged.

Our goal at the end is really to make this the empowerment platform where we have

30,000 students and 30,000 community members speaking up and feeling they own their

own safety and they can easily reach law enforcement to really, like I said, prevent these

things before they happen versus focusing on just how do we respond to situations as well.

MR. WEST: So, we've heard lots of innovative examples of the use of mobile technology in natural disasters and public safety, but then Jamie was also mentioning the problem of interoperability in the current system. So, a question I would like to throw out to each of you on the panel, and you can jump in in whatever order that you would like, what do you see the role of business and the role of government in dealing with these interoperability questions? I mean, we have next generation 9-1-1, there's the Public Safety First Net that's being developed, some people are talking about the importance of satellite backups, cell tower backups, there's LTE direct and small cell technologies. What should government and business be focusing on? Anybody who wants to jump in. And don't be shy.

MR. PRICE: I think First Net is, you know, a fantastic initiative. They have a lot of challenges ahead, but to have a public safety broadband network with high reliability and parallel capabilities and hardened infrastructure and a known user base, so it makes it much easier to push secure information and do some things that are hard to do on the public networks or in the public app store. So, I think First Net, if it can be successful, will be critical in much of the challenges we have in public safety.

MR. BARNETT: Darrell, one of the transition issues is is that Americans have come very much to expect that when they pick up a phone or try to get a dial tone they're going to get it and their call is going to go through. We realize cell phones drop connections sometime, but by and large we have an extremely reliable communication system.

One of the things that we have to think about is that in the background of all this, as we move from circuit-switch to packet-switch is the reliability of our

infrastructure, our communication infrastructure, is not necessarily the same as it has

been. FCC monitors the reliability of our legacy communications. Not many people

realize that they don't necessarily have the authority to do so for our new and emerging

technology, so it's one of the things we have to do, and it goes to FirstNet as well,

because that is going to be a packet-switched, IP-based system, and so there's going to

be this tension between the fact that the network is actually underfunded, even though

there's somewhere between $2 and 7 billion that's been appropriated, to cover the

country it's not going to have as much as it needs, and so there may be a tendency to

say, well, maybe we don't need to harden it quite so much, and there will be that tension.

But the main thing is that -- and to go to your question directly is --

there's got to be this partnership. I think that's where that is. Government's got to create

the environment for these new technologies to be able to use to ensure the safety of the

public or to allow the public to ensure its own safety and then we need to be able to allow

innovative companies to be able to do it. So, I mean, there's so many out there that need

to be discovered and found. I mean, there's one, you know, when you have all of the

infrastructure just flattened like it was in Sandy or Katrina, the ability to go in with mobile

ad hoc mesh networks, so you're actually -- you're not dependent on the electrical grid

necessarily, you're not dependent on being able to tie back in, you can have the system

there, it can go, in essence, just leaping from machine to machine to machine to create

the network, and then maybe at some point you can get back into the back hall to

communicate with other folks. Those are the types of things we need to be able to

encourage -- the satellite, alerting, all these types of things -- and so if government can

create that kind of environment where these can be incorporated, I think you'll see some

great public-private partnerships.

MR. PRICE: And I think that goes to government as a platform where,

you know, things like the GPS network, the FirstNet network, where innovation can build

on top of it, but there's not a way to invest at the level that's required without government

support.

MR. WEST: Okay, Suzy, then Kristina.

MS. DeFRANCIS: Well, I just would echo what you said about text 9-1-

1. I definitely think that is one thing that should be done. We identified that after Haiti

and thought that that was something that the government should certainly be involved in.

And what we're trying to do is share a lot of information with a lot of the tech companies.

So, for instance, we developed a safe and well website post-Katrina

where somebody could go on and note that they were safe and well and then their

relatives could find them. Now we're finding that it's much better if we make sure that

there's a button on our app so you can go to your Facebook page right away or you can

go to your Twitter page right away because those are reaching way more eyeballs than

the American Red Cross safe and well website and we need to take advantage of that.

So, I think it's a real opportunity for all of us to be sharing and to be

seeing what are the features. I love this one that you're talking about, Kristina, for college

campuses and what are the features that can tie into that across the platforms.

MR. WEST: And Kristina, what do you see as the most important

priority?

MS. ANDERSON: Thank you, Suzy. So, NextGen 9-1-1 is a program

initiative in about, I think, two, three years all 9-1-1 centers have to receive SMS from

users, and I think from the government perspective, it's very important that they also give

the same consideration to public universities and make sure that that public safety is an

important -- it's a priority, basically, that they provide the right granting programs, that

those universities know how to integrate their systems and how to give them the flexibility

to test other products out there, other innovations, but making sure that public safety is always a priority from a government perspective as well.

MR. WEST: Okay, let's move to the audience phase of this. If you have a question, raise your hand. We have microphones in back. There's a young lady back there with her hand up with a question. If you can give us your name and your organization, and we ask you to keep your question brief just so we can get to as many people as possible.

SPEAKER: My name is Danielle, I'm a student.

MR. WEST: Okay, that's enough.

SPEAKER: My question is for any of you. With regard to increased reliance on social media for disasters or, you know, things that happen on campuses, what's the best way, do you all think, to ensure reliability and accuracy of those messages that are coming in from social media? So, the reason I ask that, very briefly, is because I think it was last year on NC State's campus, there was a picture that was sent around Twitter and Facebook of someone who everyone thought was a gunman, but it was a student with an umbrella in their backpack that everybody thought was a gun. And so, when people interviewed the police officers later, they blamed social media for using up the valuable police resources on -- diverting their resources to something where they were shutting down the school for hours for a false alarm.

So, how do we kind of balance, you know, getting as much information to law enforcement as possible while also making sure our resources go to real problems and not false alarms?

MS. ANDERSON: Sure, I'll take a first stab at that. I would say the first way is -- that definitely is a problem, I think the first way to ensure that is to make sure that the social media Tweets and things that are being sent out are actually going to the

right place, meaning, to law enforcement. Ideally, you don't want people sending out

information or a tip just on social media because people aren't necessarily listening to

that. Have a channel where, you know, if it's a web forum or a 9-1-1 phone number,

whatever it may be, that they actually directly send that to the right people who can then

vet that and not let it kind of propagate.

The other thing is, only, I would say, a certain percentage, but the more

progressive police chiefs out there do have their own social media accounts, and that's

something that's taking off more so, where now they can also respond and send out one

unified message that says, you know, we're the trusted source, we received this

information, it is or is not valid. Because I think most students, if they say the local police

in that area respond, either -- they're not going to favorite or re-Tweet it, it would have

shut down that room a lot faster, but by not having law enforcement in that conversation,

it allows it to spread. So, I think they both have to be on the same link and we have to

make sure that it's going directly to them.

MS. DeFRANCIS: So, we encounter it a lot at Red Cross and think

about it a lot, but because oftentimes if we have emergency trucks over in one area of the

community, do we turn them around because there's one Tweet or two Tweets saying

they need something over here? I mean, where is the greater need and how do we

screen for that? I mean, obviously, we don't -- if it's a lone wolf out there, we're not going

to turn the truck around, we're going to wait to see if there's other Tweets that kind of

corroborate that there's a problem there and get some critical mass.

Also because we're watching it a lot, all the time, we kind of begin to

have a feel we can spot something that's not so true, and as you know, on social media,

the crowd will often correct it before you can, so that's good.   But we also use social

media a lot to try to tamp down rumors and that's sometimes a problem for us. So, you

know, for instance, we'll see things that we know aren't right but, you know, we try to respond back.

One of the things that happens sometimes is people, they're eager to help, and so they say, you know, give money to the Red Cross. Well, we may not be fundraising for this particular incident, you know, we're fundraising all the time, but there are certain things we don't fundraise for. We don't fundraise during a mass casualty like the Boston Marathon because we're not setting up shelters there, we're not doing the kinds of things that are part of our mission, and we would rather that money went to a victim's fund or something like that, so we'll often Tweet out, hey, you know, we're not doing that. Or we don't need blood, that's another one. A lot of people say, give blood -- well, we don't need blood at this time.

So, we use it to also correct information as much as we do try to watch and verify.

MR. BARNETT: A lot of it is training and it's not like 9-1-1 calls aren't sometimes erroneous too, and 9-1-1, one of the things that's a problem is we take 9-1-1 for granted, but the fact of the matter is that they generally need more money for training and doing those types of things, police departments all need to be able to know how to use social media.

MR. WEST: This gentleman right here on the aisle has a question.

SPEAKER: Yes, I am Dr. Nissad Chadrey. My question is, it would be very different from umbrella and a gun. The question is, is there any desirable creative thinking being done, because there's a decent percentage of people living in this country who do not know or speak English. How do you deal with these kind of situations? Even if they call 9-1-1 but they don't know English?

MR. PRICE: Well, I ran a 9-1-1 center for many years and we have

translation services available to those dispatchers, so when those calls come in, we can immediately connect to a service that has hundreds of languages and it's fairly transparent, and that can also be transferred to the field as well, so those translators can be used both in the field and at the dispatch center, so pretty well established services to do that and I think pretty typical in 9-1-1.

MR. BARNETT: You know, one of the things that is -- I guess you could say it's a strength and a disadvantage for America, is we're very disbursed on things like this. There are literally thousands of 9-1-1 centers across the United States.

Actually, consolidation of 9-1-1 centers would be very helpful because, in essence, you could -- if you consolidated them, you could avail yourselves of those type of translation services, you could also probably afford more of the type of technologies to handle texts, next generation 9-1-1 and those types of things, so I think that's one of the things -- there's no -- you know, who's in charge of 9-1-1? There's actually nobody in D.C. that's in charge of it and it's left up to the states. There are various agencies that do various things, and so we actually need to have some coordination on that. It's a good question.

MR. WEST: There's a gentleman right there with his hand up.

MR. SIMMONS: Thanks. Andrew Simmons, I'm an urban planner, and I want to ask about what many in the room probably will be familiar with, this NYU sociologist Eric Klinenberg who wrote a piece in *The New Yorker* in January on climate proofing cities and emphasizing the importance of social capital and when technology fails, actually, and how people rely to traditional -- those with, say, social capital connections -- they rely on that and otherwise people are left out and that's what happened, to a large degree, with, let's say, the victims -- the causalities that occurred with Hurricane Sandy. I'm wondering what your thoughts on that topic would be.

Thanks. Over-reliance -- or perhaps an over-reliance of technology, depending on the --

MS. DeFRANCIS: No, I was actually going to say it to your question, because not everybody is on social media, and we find that quite a bit in disasters. In fact, you know, a lot of the people on social media tend to be better off, they tend to be younger, urban, they're more able to take care of themselves, but what about the vulnerable people who maybe don't have the language or older population. So, I think you have to look at it as layers of communications, you know, you just can't all rely on social media by any means. We don't see it as a panacea at all.

We still, during Sandy, had to go through neighborhoods in our emergency response vehicles with bullhorns, you know, telling people we were there, and we really knew we were finally getting to everybody when they were sick of our bullhorn, but I mean, you can't -- you have to layer it on top of other technologies and you know we always tell people, particularly -- you know, call 9-1-1. We hate people to think that social media is the 9-1-1, but a lot of them do now, but I think you have to just consider it as one of many communication tools and use them all.

MR. BARNETT: And I think, you're exactly right, we are -- there's a possibility of disenfranchising people who need that type of help by totally relying on technology, and that's why it does need to be additive. For instance, I think, oldest technology for alerting were bells and that's kind of been replaced by sirens. We still need to have that type of technology.

FEMA is the lead on the Integrated Public Alert and Warning System, IPAWS, which actually integrates it. You can send out these alerts over various platforms, so you can alert -- you actually have the signs on the highways going off at the same time, your cell phone is alerting you, so there needs to be that. That's why I think there need to be programs that actually puts technology in peoples' hands for that very

reason, for emergency alerting.

And the other community that it can be disenfranchised by types of technology, and we need to think about this too, are any disability communities, hearing impaired, sight impaired people like that, and we need to think about those. That's actually one place where technology can help us, but we need to make sure that that's actually included in the calculus when those things are being deployed.

MR. WEST: Right there on the aisle, this gentleman.

MR. MONTGOMERTY: Hi. Thank you. My name is Ben Montgomery. I'm with a telecom company, LEMCON, and I have a FirstNet question, I thank you for your comments on that. The question is, when you look out at the network infrastructure building that's set to take place, how much of that do you think will be brand new -- call it cell site, tower work, you know, brand new, dedicated infrastructure, and how soon might that be happening?

What do you see -- and the second question, related to FirstNet is, the carriers, the OEMs, like Erickson, Motorola, everyone seems to have a point of view on that program, and the program does seem to be moving along, and there are also questions about D-Block spectrum allocation, what have you. So, the question there would be, how quickly do you think things are going to move along in the next months, couple of years? Is it guaranteed to happen? Because a lot of groups are eyeballing that money, and a lot of groups, such as your peers, are relying on an up and running system here pretty soon. So, cell towers, and what do you predict?

MR. BARNETT: Sure. So, the first thing I'll do is you've given me an opportunity to advertise a free publication that I wrote last September called "What Should FirstNet do First?", which actually addresses some of your questions, and it seems to be tracking on the timelines so far.

So, because of the amount of money that's involved to create a nationwide public safety broadband network, I mean, $2 billion to $7 billion sounds like a huge amount of money, but for a nationwide network, it's nowhere close enough. So, what's going to have to happen is, you have to leverage the commercial networks to some degree, and for that reason, I think that the new sites that you're going to see, the new towers, are primarily going to be in areas where it's not currently commercially viable to provide that service.

How many sites will that be? It's going to be, I would say, tens of thousands, but I can't tell you exactly because quite frankly, FirstNet has not actually announced exactly what their architecture is going to be.

Some of the most important work that's going on at FirstNet right now is creating the business model, the cost model, to be able to tell America how this is actually going to work. So, that would be the first answer.

As far as timeframe, in my study from 2012, I basically said it may take, because of the way the statute is set up -- it may take four years to actually launch. Now, that may be -- there may be some areas that go faster, and the reason for that is is that their lawyers at FCC and NTIA came up with the B-Top program to try to get there to be some early deployers from which we can learn about FirstNet and how this is going to work, but also to get something going, and so I really hope that FirstNet continues down the road that it seems to be going down and having early deployments, you can look to Mississippi, Texas, maybe the Bay Area, some of these are the ones, the early deployers, to actually get out there.

Part of it is making sure -- and I'll throw a note to Qualcomm since they're one of our sponsors, you know, making sure that the chip sets for the devices that cover band class 14, which is actually the public safety broadband network spectrum

that's going to be able to be used, but overall this could take some amount of time, and one of the things I would say, it will happen, that money will be spent, the first $2 billion. The second $5 billion is actually dependent on incentive auctions at the FCC. That may take some time. It seems to be on track, but no one has ever done it exactly that way before and so we don't know exactly how it will happen, will that yield the $5 billion and then when will FirstNet get it to spend it.

So, I think the first $2 billion will be spent. The question really is, will we be successful in launching a truly nationwide network, and will it be interoperable? And I will add, the caveat to that is, if it's not nationwide, well then it's not really truly interoperable because not everybody's going to be able to talk to one another.

MR. WEST: Right there is a young lady with a question.

MS. ELMER: Hi. My name is Stacy Elmer. I'm from HHS, the Office of Preparedness and Response. I am also an EMT. So, my question for you is, even with the implementation of this communications infrastructure, and I think actually on a federal level we're doing a decent job of staying networked with new technologies and the use of social media across the federal interagency, but when I get on my ambulance, in Maryland, we have first generation GPS systems. In New Orleans, they don't have GPS still in their ambulances.

So, I guess the question for me is trying to think through how we remedy sort of the end user of this product. There's a communications issue on a large scale, but then there's also a communications issue on a very local level, and EMS in particular and fire departments vary across the country and certainly vary across states, and I wonder if you have any good ideas for how we can leverage private industries who are developing these new technologies to actually -- it's all about funding, how do we fund the implementation of, for instance, radios within ambulances that can accept new kinds of

communication? And should there be standards? And if so, who develops those

standards? And how do we get those things funded on the ground so that we're not

doing this on a federal level without thinking through the end user?

MR. PRICE: Well, I mean, there are some standards. That's what

organizations like APCO are formed for. I think we're seeing lots of grant programs that

are funding P-25 radios and other technologies that are required.

We're also seeing the cost involved dropping. When you look at mobile

data computers today, they're usually -- they're laptops, they have external modems, they

have mounts, they have -- it's pretty expensive to put mobile technology into ambulance

and fire trucks, but now with tablets and smart phones, the cost to deploy the mobile side

of things I think is coming down considerably.

I think it's going to be, you know, a tenth of what the costs are today in

the future. I mean, you're seeing applications that are very powerful, that are very

inexpensive, and even that go beyond the capabilities that we're seeing today on

traditional systems.

MR. BARNETT: By the way, I think that some of the funding that would

be coming down, which I hope will continue to come down on a year-to-year basis, will be

to make sure that ambulances, fire trucks, police cars are actually equipped to take the

network with you, so in essence they can extend the network and it will be a way of

repeating and creating, in essence, a hotspot for public safety officials in that particular

area.

MS. ELMER: Is that something the FCC is funding or is that --

MR. BARNETT: I wish the FCC did have funding. No, that will primarily

come through DHS and through -- I think FEMA has some of those types of grants, and

then NTI -- Department of Commerce.

MR. PRICE: You will see assistance to fire fighter grants.

MR. WEST: Okay. So, I'd like to welcome Anita Stewart with us. Anita, as I mentioned earlier, is senior vice-president of strategic partnerships at the Sesame Workshop. I know you had flight delay, so I'm glad you're able to join us.

MS. STEWART: Yeah, I was on the runway.

MR. WEST: That's always fun. I've had that experience too.

MR. BARNETT: Were you able to use your mobile devices?

MS. STEWART: I did.

MR. WEST: So, I'd like to take a moment -- I know Sesame has done some very innovative programming, particularly around efforts to educate young kids about public safety. So, could you talk a little bit about your activities in this area?

MS. STEWART: Sure. We know, especially after Katrina, we know that many children were lost, they didn't know their names, they didn't know where to go, they didn't have a plan, and so we embarked -- actually, we worked with Homeland Security and we embarked on a plan, a get ready program, and really using the Muppets to communicate to young children and families about what you need to do in the case of an emergency, whether it's a natural disaster or anything that might happen.

And we now launched that program on cell phones with the help of Qualcomm in China, especially in many of the areas where there are major earthquakes. And for the first time, this information is on cell phones. And so, we feel that it really, really works for several reasons, and we actually did some research with 31 families before we launched it.

But having that kind of information in a very simple way for children and their families to really access really works from several perspectives, one, the mobile device itself, you can plan and do things anywhere when you have this program, and

later on I'll give you the website where you can get on the China one. The other is, it's

very interactive, so families are doing it, especially moms and dads are doing it with their

children, so they're building their kits, they're putting the plan together on where they're

going to meet, they learn about the community, where should they meet, et cetera.

And the third thing is, really, our content, because it is very child friendly

and Sesame friendly and children love that Elmo and the other Muppets are telling them

what to do and everything is very positive role-modeling.

In the research that we did in the States, which is online but was not on

cell phones, we really found that families were doing more of their kits, putting together

plans, and it wasn't only the children, it was very interactive.

In China, when we did the research in 31 families, the rest of the families

and neighborhoods and all that were saying, well, why aren't we involved in this? But

when we launched it, in China, we're probably able to reach well over a million families,

so, in the very areas that need that information. So, that's kind of -- and the other thing is

just on the other side of it is also after there's a disaster we have so much content that

makes children feel normalized.

I mean, in Haiti, when the schools were down, when people were in

tents, all of that, we had materials that we can have on cell phones and the parents or

whoever are some of the rescue workers or the emergency workers can help by having

that content and making a child feel a little calmer, et cetera.

MR. WEST: Great. Let's take a couple more questions. Over here,

there's a young lady with a question. There's a microphone that's coming over to you.

MS. GALAB: Hi. I'm Bridget Galab, I'm also a student working at FEMA

this summer, and I've been looking into --

MR. WEST: Where's your blue t-shirt?

MR. BARNETT: You didn't get a t-shirt.

MS. GALAB: I'll show you my badge, if you want. I've been looking at public affairs offices and public information offices and I've noticed that a lot of them are adapting starting to use social media, but I'm curious if you think that emergency response organizations or emergency management offices need to be kind of training the rest of their employees to use social media, if they're on the ground, they're the ones who can get the information out fastest?

MS. DeFRANCIS: Yeah, I was just going to speak to that with the previous question Stacy asked that we did some polling on this and found that the public has very high expectations that emergency response organizations are listening to them on social media. In fact, the poll that really startled us was that they felt -- 76 percent felt that if they posted something on social media, that they should get a response within three hours from some, you know, emergency management organization, and we know there's a gap there because, like all of us, we're all trying to get up to speed on this new technology and how to respond to it and how to answer it faster.

So, I think one of the needs that's going to be greatest for training -- I mean, we see it in our own workforce and a lot of our workforce are volunteers, a lot of them are maybe, you know, older generation, they're not used to these technologies, so we have to do a lot of training. It's going to take culture changes a bit to understand that this information is just as important as the information they're use to getting through other means.

So, I think it is a big issue, but I do see -- we see more and more local and state emergency management offices really beginning to embrace it and really getting their people to embrace it, I just think it's going to take time and training.

MR. PRICE: I think there are some challenges. You normally centralize

your public information, and social media, by it's very nature, is very decentralized, so organizations try to figure out, you know, how can we react fast, how can we -- you know, be participating in the conversation when we're trying to somewhat control that message that goes out and make sure that it's accurate.

And so, it's a challenge for not just government organizations, but, you know, corporations, everybody, trying to have a staff that really can respond to the types of questions, the diverse questions that are coming, and do it in a timely fashion.

MS. DeFRANCIS: And just one other thing I was going to add is, it shouldn't just reside in the public affairs function of an organization. We try to say that we want to push it out and make it part of our whole operational DNA, so at the Red Cross, for instance, we want people in our blood operations to know how to use social media. They're the subject matter experts, they're the ones that can respond.

And so, one of the things that I was describing in our digital operations center is a console where we can sort by topic, and if somebody has a question about their blood or their blood type or something, we can relay that to someone over in the blood operations, not in the public affairs shop, but an expert who can then respond.

MR. WEST: And this is consistent with the Sesame approach where you're wanting to kind of diffuse the information out among parents and families as well.

MS. STEWART: Everyone -- and the community as well so that they know, you know, especially for young children. You know, they don't know how to react sometimes, and there were a lot of -- I believe, after Katrina, a lot of new policies put into place, especially for young children.

MR. WEST: Jamie?

MR. BARNETT: Yeah, Bridget, so, the public affairs function, a lot of times, people think of as pushing information out, and what you're referring to is actually

bringing information in, it's a paradigm shift in some ways, but the main thing is, is -- if

you've heard up here, is, and you can tell whether there's going to be progress on this,

on how much it's being incorporated into training and into exercises, but look what's

happened over the last four or five years.

What we've been going through, at the state, federal, and local levels,

the budget problems we've had, what gets cut, training is real easy to cut, exercises are

real easy to cut, so we may actually not be doing as much as we should, and I suspect

that a lot of the efforts out there are people just taking out of hide or great, you know,

leaders are just trying to make it happen anyway, but it's really -- and 9-1-1 and disaster

response and the exercises, all this is very important that we start restoring the training

budgets just so we can do that and be able to treat social media as an integral part of

response.

MR. WEST: Okay, in the very back there's a gentleman with a question.

SPEAKER: Hi. My name is Jim. I'm a local entrepreneur. I recently

took a trip around Asia where I got to meet with some police headquarters, fire

departments, and telecommunication bureaus, and I was really impressed with the

innovations I saw being implemented abroad and the dynamics of the situations other

countries have to address.

I was wondering, what are some things you've seen other countries

implementing and addressing that we need to start looking at here in the USA?

MR. WEST: Anita, do you want to talk about other countries? You've

been in China.

MS. STEWART: Well, China, I think, you know, they have -- one of the

things that they've really looked at is -- as far as the response is concerned, I think, is

really a coordination that is outstanding, and I've seen some places that have been

impacted by earthquakes and, you know, in the next, I don't know, month, you wouldn't know that anything had happened there. So, that's one thing.

I think the other thing is that they have really looked at some of the bigger issues, infrastructure issues. I know I was in one area where the schools -- they rethought about how they started building again, so they -- instead of having small rural schools, they developed one school for an area and they really -- I think the Japanese government, actually, helped them build a safer school so that it was better from an earthquake point of view.

I think the other thing is that they're looking at the preparedness part. You know, I've been seeing some PSAs in New York, that's where I come from, and it's on preparedness, but I don't think we're doing as much in that area as many countries are.

MR. BARNETT: I don't know that I could speak to everything, but this may not be real exciting, but when I was at FCC, the great East Japan earthquake occurred, and we studied -- and we actually worked with the Japanese embassy here to learn as much as we could about it.

I mean, one of the things that the Japanese have always known, because it's obviously an earthquake active area, is hardening their networks, and so they had significant damage to their communication networks afterwards, obviously, but the fact that they do harden it was very important, and so that's something that we should learn about here as we move forward, because have commercial networks that are commercial grade, they're very reliable, but they don't necessarily withstand.

So, when we build FirstNet, it should definitely be hardened. We also need to look at how long it can sustain, and this is one thing the FCC has looked at over the past few years, you don't necessarily need three days of battery backup because,

quite frankly, it would be too expensive for us to be able to afford cell phones, but it is

something we need to start working on as a country is making sure that these things can

stay up as long as possible, that we're using the latest battery technologies that were

interspersed -- we mentioned Haiti several times up here.

After the -- I mean, that was devastating, decapitating earthquake in Haiti

in 2010, right, and -- but the amazing thing is, about 80 percent of at least two of the cell

phone networks stayed up, and they stayed up because Haiti, just because of the way

they've structured it, had a lot of generators associated with their cell towers, and the

reason that is, is their electrical grid is not very good.

And so, actually, one of the major problems in Haiti after the earthquake

was people stealing the fuel for the generators to keep the cell towers going. You saw

them start blinking off the line after a while because they couldn't keep somebody

guarding all those at the same time.

But, I mean, that actually was a major advantage to the response in

Haiti, is just having those cell phones staying up to the degree they did. We don't have

that. We actually don't have that here.

MS. DeFRANCIS: Yeah, no, James is right. I'm glad you reminded us

about that, because one of the most effective ways we've found to get cholera messages

out to the people in Haiti when they had the cholera epidemic, you know, short bursts of

preparedness tips that you could take, was through cell phones because so much of the

country was on them.

We even worked for quite some time, although the Haitian government

never approved it, to use cell phones as a way to actually put cash in peoples' hands, so

-- because a lot of people in Haiti are used to going to banks with cell phones and things

like that, and we worked on a program of cash transfer, but ultimately the government

didn't want us to go through with that, and you have to respect each country and how they want to do it.

But I see that as another way that cell phones and mobile technology, in disaster response, in giving financial assistance to people, could very well go through your mobile phone.

MR. WEST: Kristina, if I could build on that question, I'm just curious, have you gotten inquiries from campuses in other countries about either your activities here or have you looked at what's going on in other countries in terms of how they're trying to safen their campuses?

MS. ANDERSON: Definitely. I mean, unfortunately, campus shootings are not, you know, unique to international countries, but they're very common to the United States. There's been big ones in other countries, but they have a kind of a culture of shifting away from it a little bit and moving past. We have had had inquiries from Canadian universities, that's been, I think, the biggest one because they've had a couple really big massacres happen and because they're also very, you know, adaptive in mobile technologies, they're the ones we've been working with.

Also a couple of campus law enforcement associations nationally, work with Canadian ones as well, but in terms of the United States I think even the states are not equal in terms of what they -- how proactive they are in their preparedness, so I think looking at, you know, Virginia, Texas, Colorado, there are still some that are more proactive in the kind of training that they do, effective response, and the kinds of education they give their students, that it still has to kind of catch on here as well before it can go abroad. But I think the U.S. is doing that.

MR. BARNETT: Can I mention one other thing? There's another -- and this is not just to kiss up to Qualcomm because they're helping sponsoring this, but

they've got a chip that's a satellite chip, and actually you can stick these in phones so that you can -- if the entire cellular network fails, you can still be able to communicate by satellite and it can fail over to that.

So, that's one of the things, I think, and it's much cheaper than trying to put up the hardened towers, the wind-resistant towers, earthquake-proof towers, and put battery backup or diesel generators, some type of generators on there as well.

So, that's another innovation I think we need to look at for the reliability and resiliency, and it's also important for public safety as well.

MR. WEST: Other questions? Right back there.

MS. FERRIS: Hi. I'm Beth Ferris, also at Brookings. I find this all very fascinating. I wonder if any of you could talk about the impact of this technology on the ways we work. You mentioned, for example, kind of a loss of control of centralized information sharing when you might have five or fifty staff Tweeting about what's happening or what should be done or the Red Cross, what happens if one of these volunteers gives bad information? Are you responsible? To what extent is it changing the way in which we work?

MR. PRICE: I mean, it definitely is, it's requiring, you know, new policies, new ways to think about how you interact with the community. I think as we look at the PulsePoint application, it's a type of relationship that never existed before where you're really counting on your community to be your first first responders and you're actually dispatching your citizens, and that's a very different way to look at your community, you know, it's not fire/EMS here to provide you services, but here's a whole new partnership, and what other technologies -- how could that be extended? I think you're going to see a whole new class of applications where you have people that have skills that they're willing to share, and we know where they're at.

If you think about just one example, they may be an off-duty police officer being notified of crimes in progress would be similar to a PulsePoint type app but in a police application, or during a major storm, you have a building that has maybe somebody with a medical emergency but also is full of healthcare professionals that also live in that building.

So, I think that over the next few years you are going to see a whole new class of location-based service applications that are just being conceived right now. That's, I know, a little bit different than your question but, you know, the world is changing because of social media in many, many ways.

MS. DeFRANCIS: I think we've certainly -- you know, that was the big hurtle we had to get over with our legal department, you know, everybody out Tweeting, could they say things that were wrong, and honestly, it has not been a problem.

We may have had some isolated incidents and what we've tried to do is correct that information on social media, but, you know, by and large, we assume that most people sending out something are sending it accurately and when there's an instance that it doesn't, we try to isolate that, correct it, even a little humor sometimes can help.

We had one of our very best social media people, she had her own private account and she had her Red Cross account, and by mistake she Tweeted out on the Red Cross account that she and her husband liked to buy Dogfish Ale, all of the sudden, you know, it was all erupting and everything but, you know, we just kind of Tweeted out, look, you know, we've taken away the car keys, everybody's sober here at the Red Cross, don't worry, and it had the added impact of the -- you know, the crowd loved it and pretty soon Dogfish Ale jumped in and said, you know, we'll give a dollar to Red Cross if you re-Tweet this.

MS. ANDERSON: Didn't they sponsor her wedding?

MR. BARNETT: Emergency supplies of Dogfish Ale.

MR. WEST: Anita, have you encountered any special legal issues given the fact you work with young kids?

MS. STEWART: We really target the parents, I mean, but, you know, we have to -- everything that we do, we use social media a lot as well, you know, like Elmo has a Tweet and so does Big Bird and all that, but you know, we're really careful about what we say and how we say it. We really haven't had any major issues coming up.

MR. PRICE: When I first gave the concept of, hey, let's dispatch our citizens to major medical emergencies, you know, it did raise issues that had to be explored, you know, so you are getting into areas that just haven't been explored. Things are possible today that weren't possible before, and you just have to work through them.

MR. WEST: Okay. I think we have time for one more question. Right here.

MS. KASAL: Hi. My name is Jackie Kasal, I'm a Presidential Innovation Fellow working with FEMA. And my question is about the campus app. So, I actually have two, so I'm going to try to sneak in two, and whatever I can get, I'll get.

Have you thought of scaling that up and creating a city app?

MS. ANDERSON: Definitely. That's the larger vision. We're just starting with universities, but eventually anyone could have the app on their phone and use it.

MS. KASAL: Okay. And then my second question is for Red Cross. What kind of data sharing are you doing for the data that you're collecting for other emergency response officials and agencies?

MS. DeFRANCIS: Well, we're just exploring that and, you know, during a disaster we're constantly talking with our colleagues at FEMA. We have a daily call

down about the emergency social data we're seeing and we're checking it what they're seeing, trying to see trends and things like that.

We've had some opportunities now with emergency management offices, like in Oklahoma and other places, to be in the state emergency management operations and sharing our social data there with -- and whatever is coming in, mostly locally, so we're beginning to work it, but we haven't -- you know, we're still new at this and we totally agree with the principle of sharing. That's how we'll do it, but we're still working through the processes.

MR. WEST: Okay. I want to thank our panel. All of you were terrific. I want to thank Kristina, Suzy, Anita, Jamie, and Richard, and thank you very much for coming out.

(Applause)

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