



Mobile Applications for Emergency Managers

featuring Adam Miller interviewed by Bill Pollak

Bill Pollak: Welcome to the SEI podcast series, a production of the Carnegie Mellon Software Engineering Institute. The SEI is a federally funded research and development center at Carnegie Mellon University in Pittsburgh, Pennsylvania. A transcript of today's podcast is posted on the SEI website at sei.cmu.edu/podcasts.

My name is Bill Pollak, and I am the communication and transition manager in the SEI Software Solutions Division. Today, I would like to introduce an interview that I conducted in late June at one of the largest outdoor music festivals in the United States. A team of SEI researchers attended the four-day music festival at the invitation of Adam Miller, director of the Huntingdon County, Pennsylvania, Emergency Management Agency.

The festival typically draws close to 100,000 concert goers to a rural farm in Pennsylvania that lacks significant infrastructure and is accessible only by a two-lane highway. Miller is charged with ensuring the public safety, so it seemed like a good match to partner with researchers from the [SEI's Advanced Mobile Systems Team](#), which supports emergency responders and soldiers in the field who work in situations with limited computer resources, poor connections with networks, and highly diverse missions.

Given the size and social nature of the concert, Miller and the Advanced Mobile Systems Team determined that it would be an ideal test environment for a number of ideas the SEI team was developing around social media. The team's plan was to gather and analyze social media data such as tweets in real time and render it in ways that might support public safety activities. During research and development, the SEI researchers examined social media associated with the Boston Marathon bombings and Hurricane Sandy. The data from those events helped the team understand the kinds of social media information that might prove useful, using a technique they developed known as edge analytics. The following is an audio recording of Miller talking about his experience with the tools.



Bill: I'm curious about, you know, how you hooked up with our guys.

Adam Miller: Well, I participated in reviewing or looking over a lot of experiments and looking to the future of emergency management needs, I understand that the social space in which we live as people in our communities is so broad, wide, and deep, that if we fail to take advantage now of capturing that information process flow, in order to provide the best possible services to folks and give them a chance to communicate with us, we're going to fail ourselves.

Among the many things I looked at there, I'm looking at technologies that can, you know, help technology paths that can help support the broader prevention and response from mission spaces within the responder community. As we talked, the CMU folks were knowledgeable about basically this mission space. They also had a very good understanding in our discussions of what the responder mission ultimately will be in the long-term.

Bill: The future of it, and how it's evolving.

Adam: That's right. We entered into deeper discussion, and I saw this venue here as an excellent opportunity to basically incorporate the ideas that they have and that we have together into something that could potentially be actionable.

So, we decided to make an experiment. We met. We're a very small department, but we're well connected in our universe. You can look around you. Right now, we're one of the largest cities in Pennsylvania for four days.

So, it's an interesting experience. We opened the dialog deeper to say, "What would we want to get out of it? What could be mutually beneficial?"

Bill: So, what do you want to get out of it, proof of concept?

Adam: Well, in part there's a proof of concept, and as they're working to proof this concept for us, in my mission space today, I'm able to capture a flow of information in our working environment that affects the way we operate here.

And, if we can identify things that may threaten the efficiency of operation or, potentially the safety of our guests, we'd like to be able to, make use of that information. The challenge for us is that there's a cognitive overload of the amount of information in this space. In order for us to be effective in moving forward with making actionable decisions on this broad piece of intelligence that's out there, we have to apply business rules in order to condense that information into something that can be acted upon in a reasonable circumstance—that a reasonable person would say, I would take this information and do something with it.

There are so many different vectors of information out there that we want to have them intersect in a space where we can capture them in real time. The moment of opportunity exists now to



prevent what's going to happen in the future. We want to move further away from the reactive side of the spectrum and closer to the proactive and preventative side of the spectrum.

Bill: So, do you think the real time component is the difference maker in terms of what these guys are developing?

Adam: That's the goal that we have. This experiment's goal is to essentially create a new realm for our prevention space to where we can potentially see in real time—or even some day possibly predict—what may be our next hazard and what may be the next operational challenge we're going to face. This experience is designed to give a sample set of business rules that we would go by: “What would threaten our way of doing business? What would threaten our community's efficiency or safety?” You know, all of those different perspectives. It goes the whole way from the benign to the adversarial.

What we could do with that is, you know, we're not reaching into closed space. We're not reaching into private space. We're taking what's in the open source public domain and placing that against known elements that we can pull in.

So, an example would be, we hear about an incident that there is an electrified wire down. That happened yesterday. So, because of that, we got reports from the field that traffic was backing up. So, it involved the Department of Transportation, first responders, and individuals in the group. From here, we pushed information using the applications of all the festival-goers from all over the country to tell them, “Hey, don't come down this road, [\[U.S.\] Route 522](#). Come around. This is an alternate route.

Bill: And, you did that through what channel, through Twitter?

Adam: We actually did it through an application, a push application.

Bill: Oh, I see. I see.

Adam: So you know, we were taking advantage of all of these different directions and streams and saying, “Right now we know something.” What it did was it allowed us to redirect people before they got here, and it relieved the traffic congestion. So, everybody won. So, that's an example of where we can win. You know and I know there are more.

Bill: So, one of the questions I asked the guys was, it seems to me that all of this is kind of predicated on the assumption that a lot of the people here are using Twitter or a large percentage. Or, at least enough that you're getting a representative reporting from this crowd, right?

Adam: It's a starting point. In the future, you know, we need to be in a position to work with all the social media resources as well as the proprietary media resources and the established media resources or mainstream in order to communicate with our community of patrons what our needs



or expectations are, and, hopefully in the future, find a space where we can be allocating resources more effectively in a preventive manner because we can anticipate what their needs are going to be. That's what we did with the traffic thing, is we actually anticipated that that backup would close us down. So, that's why we pushed it out, and it allowed that relief. So, these are real-world examples of where that efficiency can be found. And, this is only a small segment.

Bill: Sure.

Adam: Imagine if we were able to grow this segment. Our mission space is pretty clear. We're trying to keep people safe. We're trying to allow them to do their daily business unobstructed from the challenges of the environment they face.

I believe that an informed and aware individual is empowered to make the best decision. They're going to take care of themselves. I believe in the power of the individual. So, if I empower you and train you how to save your life, you'll probably save your own life. If I empower you to stop bleeding on somebody, then you're more likely than not to take action to help somebody.

These are the ranges of opportunity. When we have, and we know this, this is empowering us to help other people.

Bill: Thank you so much for joining us today. For more information about SEI's research in pervasive mobile computing, please see the "[Research](#)" tab at sei.cmu.edu/mobilecomputing/research/index.cfm.

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