

we need to talk

EMERGENCY MANAGEMENT



THERE'S NOT
A LOT OF
TIME LEFT

JUST DO IT
AND NOBODY
IS GOING
TO STOP YOU

LET'S GET
THINGS DONE

MADNESS
AND
CHAOS

THAT'S WHERE
I THRIVE

CAPE BRETON
UNIVERSITY


SENTINEL

AN INTERVIEW WITH
DARRELL O'DONNELL

MASAS ■ GIS ■ SITUATIONAL AWARENESS ■ CONTINUUM LOOP

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Cape Breton University promises and delivers an exceptional educational experience for students. Our faculty, students, and graduates are recognized nationally and internationally for innovative accomplishments from academic excellence to athletic prowess. These successes contribute to Cape Breton University's growing reputation for excellence both in and out of the classroom.

Sentinel Systems, through technology and innovation, is helping to shape the next generation of disaster management. As a participating partner of MASAS (Multi-Agency-Situational-Awareness) and CAP-CP (Common Alerting Protocol – Canadian Profile) Sentinel is contributing to frameworks and standards that will shape disaster management in Canada for the next decade.

For clarity and readability, this interview is written in the first person. However, the responses are paraphrased by the author unless they appear in quotations. This interpretation has been approved by the interviewee.

Ottawa, Ontario Sydney, Nova Scotia Bathurst, New Brunswick

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PERSPECTIVE

You've worked with emergency management technology for over fifteen years. You've worked with police, fire, and ambulance personnel, government agencies, and the military. And you've founded a few companies. What's behind all that? What drives you?

Well I guess, for me, it starts with a love of madness and chaos—finding that and then bringing order to it. That's where I thrive. Because once it gets to a point where everyone knows exactly where we're going, it's like "I have to go over here and find something to break." What drives me is finding a problem that pisses me off. And that's when you know you're in the right place. When there's a problem and you're really passionate about it and you love it, or you're angry about it. If you're looking at something and kind of sitting there scratching your chin, you're never going to do it. You just won't.

So I actually started out when I graduated with a degree in civil engineering (I started in electrical), and I was working as an environmental engineering consultant, and I was on the fast track to becoming a partner with the firm, but that just meant working fifty to seventy hours a week for the rest of my life, and I was like "...no." Then a friend of mine called me and asked me if I wanted to work on a project with him. So I quit my job and flew down to Trenton Air Force Base, and there was a meeting going on with all the search and rescue people. I got there, and it was my first day. Anyway, so the meeting starts and they're like "we want to cancel the project."

So I'm sitting there, just quit my job, thinking "well that's not good." But the thing is that nobody had actually sat down and listened to them, actually listened to what their problems were. So after three days there, everybody was just pumped. That's an important thing I've learned. If you go in there and don't ask permission and just do it, no one's going to say anything. And I didn't look back from there.

That was all back in the late '90s. I founded Continuum Data Systems in 1997 and Digital Space Systems Inc. (DSSI) in 1998, which were both search and rescue systems—Continuum for incident management and DSSI was GIS-based. I founded Black Coral in 2002, which was a software suite for incident management and situational awareness. And I'm currently working with Continuum Loop Inc., which I founded in 2010 as a consulting firm for emergency management technologies.

I've always liked working with first responders, military, search and rescue people. That's what I've done my whole career, dealing with people who are actually using stuff. I was at National Defence for a while. And so there I was, sitting in the command room, and they'd say "what are you doing?" I'm writing software, so I need to see what they're doing. And they'd say "well we don't do that," and they would have the big guys come and do requirements analysis and stuff. Of course you need to understand the leadership needs, but if you don't understand what the operators are doing, it'll never get adopted.

TECHNOLOGY

You've done a lot of work with MASAS. What is the technology? Why do we need it?

MASAS, or Multi-Agency Situational Awareness System, is basically a set of standards that lets various partners in the emergency management world share information automatically. You can think of it like a big bucket. There's a whole bunch of people working on different things—police, fire, EMS personnel, city workers, incident commanders and their staff, border security, natural resources officers, you name it. So you and all these partners put information into this bucket, and then you can all pull out whatever information you need. Right now, there isn't a real comprehensive way to do that. There's phones, email, faxes, radios, and that's basically it.

I was just talking to a friend of mine who's a paramedic. And he's telling me about going to calls, arriving on scene, and having to wait for ten minutes for the firefighters to show up even though the fire station is two minutes from the scene, and that's because it's taking too long for fire dispatch to get the information that they're needed somewhere. That's ten minutes of life saving time that we're losing.

Another friend of mine is a firefighter. And he tells me that sometimes he's dispatched to a medical call, and he arrives on scene before the paramedics, and then the paramedics show up with full respiratory gear. The patient has an infectious condition. And nobody ever told the firefighters that.

So this is what pisses me off and drives me to look for better answers. All this can and should be done automatically. But the systems just aren't integrated. We can share information, and we're not doing it.

A lot of the information that emergency services deal with is private, confidential, or otherwise sensitive for security reasons. How can we trust MASAS systems with that kind of information?

For sure that's a legitimate concern, especially with medical information, criminal information, and military information. You don't want that stuff in the wrong hands. But that doesn't mean you don't share any information at all. There's certainly information that can be shared through this system. The most important details aren't necessarily private.

So first, back to our bucket analogy, you have to trust whoever is holding the bucket—whatever third party medium is going to host the servers that share the information between various agencies, that has to be a trusted and neutral party. And then it's just up to each agency to decide what information to share. There's no obligation to share anything. But things like road closures, where there's a fire, whether or not protective gear should be worn to a medical call, that kind of thing can be shared without much concern. And remember, this isn't information we're giving to the public; it's just going to other emergency services, and those are partners that we should be able to trust anyway. So this is absolutely doable.

So MASAS is a good idea, a good set of standards as you've said. If we adopt them, what does that actually look like in terms of the software we use?

There are two basic ways to implement MASAS. The first is to actually implement it right into the Computer-Aided Dispatch (CAD) system. So your CAD system just shares certain information with other CAD systems, and it's all there automatically.

Another way to use it is to implement it into the in-vehicle computer terminals so the responders on the road can actually input the data, which is shared back to dispatch and then also to other MASAS partners for them to use. For example, sharing road closure information is a big deal for first responders. So some of the paramedics who are getting the system wanted to be able to input road closures themselves, right from their ambulance terminals. So if one paramedic notices a road is impassable, she puts that in with a few clicks, and then all the other paramedics, dispatch, and partner agencies also know about it.

And this is all standards-based, so it can work across any CAD system and any computer system. And it's an extremely easy thing to set up. With some of the ambulance guys, we set it up in one afternoon. It's already up and running in a lot of places. And even if integrating it into the CAD system is a problem, MASAS can also sit beside CAD and run separately, from an internet browser window, so you just get the information from another interface. And that works too. It's also a great addition to GIS mapping systems like Esri so you just see all the data visually.

What's MASAS-X?

You can think of MASAS as the set of standards, or rules if you will. But then you have to do something with those rules, with that standard, to get any use out of it. And the vision was always to leave no agency behind, even if it can't pay to get all this stuff running. So the Defence R&D Canada Centre for Security Science developed MASAS-X, which is essentially a free set of tools that anyone can download, build upon, and implement just as they are. So you can basically think of MASAS-X as the operational counterpart to MASAS. But a lot of larger and more sophisticated operations require more than what MASAS-X is offering, and that's where private industries, like the ones I've founded and work for, make the tools better and develop them for more specific purposes.

What kind of information would be shared?

It could be anything. It could be specific locations of things like fuel depots, water supplies, service stations along with which places have resources available (e.g. which gas stations are open and have gas during an emergency that causes a fuel shortage). Or it could be raster-type data that shows things like pollution using color codes or plume projections for airborne hazardous materials using vector maps. It could be road closures, as I've mentioned, or water levels, crowd sizes during protests or civil disorder emergencies—really anything you can quantify can be shared somehow using MASAS or a combination of MASAS and GIS software.

Is there anything else it can be used for?

Glad you asked. One other use for MASAS software is in an incident command centre where information sharing is the most critical. Staff in the command centre could input information and have it shared immediately with their dispatchers, partner agency dispatchers, city executives, and responders outside of the command centre. And it's not only great for information sharing, but it also helps people in the command post not get bogged down by having to share this information by fax, phone, radio, or email. There's a technology in the United States that's already doing this—much in the same way as MASAS is starting to in Canada. It's called NIEM, the National Information Exchange Model. There's more about that at www.niem.gov.

What other technology is out there for command centres to use? Aside from information sharing, what kind of software is actually used in a command centre?

One exciting system is a software suite developed in the United States called “Command Post of the Future” or CPOF, which was made by DARPA, the Defense Advanced Research Projects Agency. It's, in simple terms, a way to visually display and share all the information that command centres need to make decisions. It's now an official technology that's used by the U.S. military on the ground, but as you can imagine, there's a lot of potential for this to be used domestically as well for emergency management purposes. There's an official video on YouTube that explains what it does in a bit more detail.

What about next-generation 911 (NG911). Do you think that is the future when it comes to emergency services and people requesting help?

That's not an area that I follow closely, but there is certainly a lot of potential there. There was a story recently about some kids in Australia who got stuck in a culvert, and from their smart phones they posted about it on Facebook, fully expecting that to be a legitimate way of accessing 911 services. Of course, they waited for a long time before help got to them. But that raises an important discussion: why can't there be more ways to access 911—by Twitter, by text, by sending in a picture of something, and using the GPS chips built into cell phones. There's even talk about letting a 911 operator take control of a cell phone that's dialed 911, for instance making it impossible for the caller (or an aggressor) to hang up. More and more, that's the expectation that people have, and technology has been very slow to adopt.

Another cool technology that they have in some places in the United States is this network of acoustic sensors that alert police when there's a gun shot. And they completely remove the need for humans in these cases. The future of emergency management is going to have a lot more things like that.

And then, sort of the opposite of that, is a system called Ushahidi. It was originally developed to map violence in Kenya after the post-election fallout in 2008, but it has turned into a crowd-sourced GIS-type system for mapping any kind of incident. Think of it as social media meets emergency management.

VISION

A lot of what you talked about sounds like incredible, life-saving technology. And I've never seen any of it being used in Canada. What's the hold up?

Well that's what really frustrates me. A lot of this stuff can save lives. It's not prohibitively expensive to implement. And we're still not doing it. The thing is, the emergency management market in Canada is really underserved. There isn't a huge amount of money, and there just isn't big business in it. So lives are being lost because things aren't being done the right way. I mean, with some agencies sometimes, there is just no [expletive] capability at all. And now that I'm working with the government, I'm realizing that very few people are buying this kind of software. So they have nothing. Literally nothing. People are using whiteboards, clipboards, radios, and maps. That's it. That's just wrong. We need to fix that. We absolutely need to fix that.

What about services that have a budget to work with like police services in major cities. They're reasonably well-funded, right? Why don't they have this stuff?

The way it works is that people buy stuff like software based on a capital expenditure model. Meaning, they think, they pay for it once, and then that's it. Like furniture or something. But in reality, that's not how this works. Software should start with a spike of money for the initial purchase, but that can't be where the road ends. What's been happening is that services don't foresee the ongoing costs.

So all the budget goes into the software, and then a year or a year and a half down the line, organizations realize they have to change how they operate based on the new software, and there's no budget left to make any changes. Of course, that leads to problems, and then people blame the software. My guess is that that makes people somewhat reluctant to take on more technology upgrades. But they need to realize that buying new software is a good investment, it is a good plan. It just needs an ongoing commitment rather than a single lump of cash.

So with all this talk about software, do you think that technology is the silver bullet when it comes to saving lives in the emergency management world?

No, absolutely not. I talk about software because it's the most powerful tool that almost everybody is neglecting to use to its potential. I talk about this stuff, I focus on it, because it's the most powerful thing we can do better to save lives. But in the end, it's just a tool; it's maybe five percent of the solution. The rest of it is about policy and operations. What we really need to do is reimagine how emergency services operate in the twenty-first century. A lot of the policy and procedure that we're using neglects to factor in common sense. It's about protection from liability, and it takes away individual professionals' ability to make decisions that make sense. So if we can start implementing some of the best software solutions that already exist and then adopt smarter policies to exploit them fully, we'll be in good shape.