

New Sensor Strategies for the Emergency Sound-Off: The Next Generation of Emergency Alerts

Once upon a time, emergency management was a rather primitive affair. You can likely call to mind many images from old movies or television shows, portraying police or military officers grouped in front of a huge, wall-mounted map in an operations center. As phone calls flood the center, a pushpin goes into the map to mark the occurrence of each progression in the event. Soon the map is a virtual pincushion of multicolored markers, each bearing silent testimony to an unfortunate, possibly tragic occurrence.

But technology has progressed. While the wall map pincushion is no doubt still employed in some locales, the standard for imaging, mapping and emergency management is now digital. And certainly, applying the most cutting-edge technologies to the advancement of emergency management capabilities is of crucial importance. Even the smallest incremental improvements can result in speedier responses to emergency situations, with a payoff in lives saved and property losses mitigated.

And now, emergency management technology is poised to take another leap forward.

The Power of Real-Time, Predictive Analytics

TransVoyant has developed technology that is light-years advanced from the old wall map pincushion. Named Continuous Decision Intelligence™ (CDI™), this new technology reports and maps what *has* happened and what *is* happening, utilizing a variety of imaging platforms. But what truly sets CDI™ apart is its ability to also predict what *will* happen.

Modern technology produces hundreds of live data streams, both public and private. And a massive variety of historical data is also available, in quantities that increase exponentially almost by the second. CDI™ taps into the historical data, monitors hundreds of live data streams, and combines the two to predict outcomes and likely progressions in emergency scenarios. The result is a platform that provides imaging, real-time alerting, *and* predictive warnings.

CDI™ Put to the Test

In October 2013, Austin, Texas suffered torrential rains that dumped more than a foot of water on the area in just a two-day span. Massive flooding resulted, damaging buildings, roads, bridges, and public utility infrastructures. The damages totaled more than \$100 million in losses. And tragically, four lives were lost.

TransVoyant recently partnered with the City of Austin to put CDI™ through its paces in a proof-of-concept trial. It was a unique opportunity to test the performance of CDI™ utilizing real-world data. All of the data generated during the flooding of 2013 had been recorded and saved, including 911 calls, 311 calls, social media activity, water stage reporting, water sensor readings, weather reports, street closures, and much more. Every stream of data that would have been available during the live event was available for the simulation. This data was fed into CDI™ in chronological order, enabling the live simulation of an historic event.

Before the event simulation began, a number of 'rules' were entered into CDI™. User-defined rules determine the messaging that will be displayed, both for real-time notifications and for

predictive messaging. The rules assure that the CDI™ is customized to perform to the user's needs and expectations.

Predictive rules are typically based upon past events. An example of a predictive rule might be something like the following: "When water gauge A exceeds 19 feet, water gauge B exceeds 7 feet, and both occur within the span of one hour, then Onion Creek at East Canyon Creek Road will flood within four hours."

As the event simulation unfolded, message alerts fired frequently, each positioned at the precise point of occurrence on the geographical imaging (which can be toggled between map and satellite views, and scalable to building level). Predictive alerts, such as the example above, gave emergency management officials notifications of impending problems far in advance of actual occurrences.

The benefits of prognostic messaging are numerous. But just one example is that the early warnings provide police with the ability to close dangerous roads before they flood rather than after they've flooded - potentially limiting the loss of life from vehicles swept away from flash flooding. Ultimately, the CDI™ Platform enables emergency management teams to make the best use of finite resources, allocating personnel, equipment and materials with pinpoint precision in limiting loss of life and mitigating property damage.

CDI™ Offers a World of Potential

The CDI™ Platform offers a range of possibilities that extend far beyond simply managing disasters and emergencies. CDI™ carries the promise of enabling faster, more accurate decision-making. And most importantly, the CDI™ Platform promises to morph business and emergency-response decision-making from the reactive to the prescient.

The predictive analytics capabilities of CDI™ are applicable to a host of business enterprise and government agency forecasting and management needs. Many companies, for example, currently use CDI™ to monitor and manage their interests in the global supply chain, benefiting from a real-time situational awareness of inventory in transit. And government intelligence agencies currently use CDI™ to exploit Open Source (OSINT) data streams.

Fortunately, modern technology has advanced far beyond the old-fashioned wall map pincushion that was once state-of-the-art. And now with the advent of CDI™ technology, emergency management and business decision-making will be more about shaping the future, and less about reacting to the present.