**Modern Technology Empowers Government with Advanced Emergency Planning and Decision-Making Capabilities**

A primary charge born by government at every level is the protection of property and people. Many would argue that no responsibility weighs more heavily upon the shoulders of government decision-makers. Many would also argue that no responsibility is more difficult to fulfill when dealing with the complexities and vagaries of an emergency scenario. By its very nature, emergency management requires making accurate decisions with lightning-fast speed, all in the face of myriad dynamically changing conditions.

The fiasco of hurricane Katrina provided a profound example of governmental failure in the management of an emergency scenario. The federal government's response to this disaster was roundly criticized as slow, befuddled and ineffective.

And in the subsequent findings of the Select Committee investigative report, *A Failure of Initiative*, the lack of timely information afforded to key decision-makers was identified as a key cause of the government's failures. In the words of the report: "Many of the problems we have identified can be categorized as “information gaps” – or at least problems with information-related implications, or failures to act decisively because information was sketchy at best. Better information would have been an optimal weapon against Katrina." Technology is now poised to provide governmental decision-makers with that "optimal weapon."

In an emergency scenario, much depends upon the speed and efficiency of Emergency Operations Centers (EOCs). One goal that governmental EOCs are working towards is the ability to predict outcomes and trigger appropriate responses more quickly. Infinite progress towards achieving this goal can be made by better leveraging sensors, open source data, contextual imagery, and predictive alerts.

In short, technology stands ready to eliminate the "information gaps" that were identified as catalysts in the mismanagement of an unprecedented emergency scenario.

**The Power of Real-Time, Predictive Analytics in Emergency Management**

Live and predictive emergency operations platforms offer technology light-years ahead of the standards that were employed during Katrina. Technology like TransVoyant’s Continuous Decision Intelligence™ (CDI™) Platform reports and maps what *has* happened and what *is* happening, utilizing a variety of data streams, imagery, and patented algorithms. But what truly sets this technology apart is the ability to also predict what *will* happen.

Sensors, systems and people produce trillions of data streams in quantities that increase exponentially almost by the second. But the question remains: *“How can government EOCs use this massive amount of data to improve response times and take proactive actions?”*

CDI™ taps into this data, correlating and analyzing historical and live data streams to predict outcomes and likely progressions in emergency scenarios. The result is a platform that provides contextual imaging, real-time alerting, *and* predictive warnings.

## Predictive Analytics in Action

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. The difficulties and damages caused by this incident were very similar to those of the Katrina disaster, though on a vastly smaller scale.

TransVoyant recently partnered with the City of Austin to profile what a predictive analytics platform would have allowed them to accomplish in a natural disaster scenario. This demonstration leveraged CDI™ toward the goal of improving the city government's EOC situational awareness strategies and processes.

Much of the data generated during the flooding of 2013 had been recorded and saved. This included satellite imagery, 911 and 311 calls, social media updates (ex. geo-located tweets about flooding), water stage reporting and sensor readings, weather reports, street closures, and much more. Many of the data streams that would have been available during the live event were fed into CDI™ in chronological order, enabling a live simulation to help understand and predict responses that would have reduced risks to citizens and infrastructure.

In order to correlate and analyze the data flowing through CDI™, a number of simple, predictive ‘rules’ were entered into the map-based user interface. User-defined rules determine the messaging that will be displayed, both for real-time notifications and for predictive messaging, to first responders and citizens. 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 events unfold, rapid message alerts fire, each positioned at the precise point of occurrence on the geographical imaging display. Predictive alerts, such as the example above, give government officials notifications of impending problems far in advance of actual occurrences, increasing lead times for proactive decision-making and actions.

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 – potentially limiting the loss of life from vehicles swept away from flash flooding. Ultimately, predictive alerting empowers government to make the best use of finite resources, allocating personnel, equipment, and materials with pinpoint precision in saving lives and mitigating property damage.

## Predictive Analytics Offers a World of Potential

Forward-looking technologies such as CDI™ offer a range of possibilities that extend far beyond simply managing disasters and emergencies. Many companies currently use CDI™ to monitor and manage global supply chains, benefiting from proactive risk awareness of inventory in

transit. Government intelligence agencies are also using CDI™ to exploit Open Source (OSINT) data streams for a wide host of mission operations.

The Katrina report recognized the need for government to be "…as agile and responsive as the 21st century world in which we live." That's a goal that government can best accomplish with the benefits provided by advanced 21st technology like CDI™.