Alabama builds a secure common operational picture for the entire state with Google Earth Enterprise

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>
> **Chris Johnson**
> Vice President of Geospatial Technologies at GTAC

ABOUT GOOGLE EARTH ENTERPRISE

Google Earth Enterprise connects geographic data to your people, work and processes by providing a fast and simple to use interface for non-specialist users to explore and interact with massive datasets of your own geospatial data. Asset tracking, marketing properties and site surveying are a few examples of the business processes that Google Earth Enterprise simplifies. Data only gets used if people can find and consume it – and there's not a better way to finding and visualizing it than with Google Earth!

For more information visit
http://earth.google.com/products.html.

Introduction

Established on June 18, 2003 as the first state cabinet-level Department of Homeland Security, the Alabama Department of Homeland Security (ALDHS) coordinates with federal, state, local and private sector officials to collect and analyze information regarding terrorist threats and activities, to protect lives and safeguard property. As part of this mission, the department facilitates collection and delivery of relevant information to first-line responders. In total, ALDHS is responsible for protecting each of Alabama's 67 counties, a Native American tribe, several major waterways and nuclear plants, a port and 28 identified critical assets.

The Geospatial Training and Application Center (GTAC) at the U.S. Space and Rocket Center bridges the gap between research/developers and end users in the area of spatial technology research and product development. As a state agency, GTAC is uniquely positioned to help governmental agencies across the State of Alabama design, implement and sustain geospatial information systems supporting local, county and state governmental mapping initiatives.

Challenge

Sharing homeland security information within the government, even between departments, can be tricky due to the information's sensitive and proprietary nature. Agencies fear that sensitive data, such as the locations of critical infrastructure, will leak. And with no secure platform for sharing data, governmental departments and agencies often favor secrecy over transparency. This reluctance to share information also makes it difficult for government officials and emergency teams to respond effectively to emergency situations, since they have no common data set or means of communicating across departments or teams. Financially, limited information-sharing can also lead to overlapping expenses as departments separately acquire the same sets of data.

One of the first assignments Alabama Governor Bob Riley gave ALDHS when it was first established in 2003 was to better understand what critical homeland security data the state already possessed and, by extension, what data it should focus on acquiring. Data inventory surveys indicated that state agencies had already collected massive amounts of imagery and geospatial data under contract in prior years. Tasked with working across departmental lines as well as at state and local levels of government, ALDHS identified a need for a secure, common information-sharing platform on which to compile and evaluate the data that different departments and groups had collected. Given a significant wealth gap across the state's counties, this information-sharing platform also needed to be relatively inexpensive so that ALDHS could offer it free of charge to county governments. In turn, each of the county governments would be motivated to share and upload their local information to the platform.

Solution

ALDHS approached GTAC to assess geospatial options for this common platform. They agreed that the end product not only needed to be affordable and internet-based but also absolutely secure and easy to use. After reviewing solutions offered by several leading technology vendors, ALDHS chose Google Earth Enterprise, the solution for creating and publishing customized Google Earth databases on private networks. Not only did the Google platform offer an intuitive interface that was accessible to users not trained as GIS specialists, but it was powerful enough to integrate large volumes of GIS data into a consistent, effective graphical display. And there is no dependence on connections to the public Internet. Upon receiving a favorable recommendation from the evaluation team, ALDHS Director, Jim Walker convened a meeting with representatives from 25 departments in the state's government to assess their confidence in the proposed solution. A resounding vote of confidence from each departmental representative led the way to an official launch in July 2006 of the "Virtual Alabama" program.

Results

With Google Earth Enterprise, Virtual Alabama can now assemble, display, evaluate and share data with state, county and municipal governments, including emergency responder teams and law enforcement. Despite initial worries that state, county and municipal governments would be reluctant to share their data, rapid program adoption by some of the poorest counties in Alabama – many of which had never seen their county mapped in a unified geospatial system – spurred more affluent counties to quickly follow suit in bouts of friendly competition. Since program launch the Virtual Alabama user base has grown to more than 2,100 users representing over 550 agencies across the state. County and municipal governments now supply approximately 80 percent of the state's geospatial data. In addition, ALDHS is now not only sharing disaster management data using Google Earth Enterprise but also data from such areas as the state's education, economic and agricultural segments as well. ALDHS and GTAC continue to work with every county to incorporate additional information and train personnel in using the Google Earth Enterprise solution.

Security and Usability

According to Chris Johnson, Vice President of Geospatial Technologies at GTAC, "the thing that has made Virtual Alabama successful is that contributing groups have no fear of redistribution of the data." Because of this level of security, Virtual Alabama has created a community of users across government lines that are dependent on each other. "The strongest part of this program is not the hardware, the platform, or the data collection, but the community of users that has given strength to the program," says Ms. Johnson. Moreover, she notes, "we see Google Earth Enterprise as a keystone to this program" for a number of reasons, not the least of which is usability. "We call it a twelve-year-old program," she adds, "because any twelve-year-old could use it. We hope you don't mind."

Google Earth technology also allows users to create presentations easily in the form of documents, maps and movies using the data from the Virtual Alabama database. These presentations can be shared among government officials or, where appropriate, with the general public or the media via a government Web site in order to keep the citizens of Alabama better informed about emergency response efforts and available resources.

Economic Efficiency

With the common platform provided by Google Earth Enterprise, Alabama has significantly reduced duplication of effort across departments. The common operating picture has in turn reduced overlapping costs within the state. State offices have also been able to use the collected data to better identify the spending holes and address the state's economic challenges.

Application

The central goal of the Virtual Alabama program is to ensure "the right people have the right information at the right time." Using Google Earth Enterprise, the Virtual Alabama team has built what the department calls a "bridge of communication between emergency responders." Equipped with the Google Earth platform, ALDHS has been able do such things as model hazardous explosions with resulting plume possibilities, allowing department officials to plan public evacuation routes more effectively.

In addition, SketchUp, Google's three-dimensional architectural modeling tool, has given the Virtual Alabama team the capability to build accurate models of schools and critical fixed assets, and overlay those models with fire hydrant, electrical wire, and hazardous chemical data. With the enhanced situational awareness provided by such data, ALDHS officials can not only plan more effective disaster response scenarios, but emergency teams are better equipped to respond to crises because they have access to accurate data shared by all ER teams.

Encouraged by the success of the program's first stage of implementation, ALDHS is working with the Google Earth team to develop tools that take situational awareness to the next level. Additional applications include delivering detailed views of the interiors of buildings including furniture and live footage, directing responder teams in emergencies through the platform, overlaying real-time data (traffic, etc.) with route mapping to better manage and control resources and integrating a public emergency broadcast system.

General examples of real-time application of Virtual Alabama include:

• Common operational picture for emergency personnel
• Emergency evacuation routing
• Situational awareness
• Vehicle and asset tracking
• Critical Infrastructure mapping
• Identification of assets and vulnerabilities
• Visualization of risks
• Plume modeling and real-time sensors feeds
• Implementation of protective measures during events

Conclusion

Google Earth Enterprise has provided a highly effective framework in which to support public sector programs in Alabama. As a platform, it has helped produce the common operational picture needed to protect lives and safeguard Alabama citizens in times of man-made or natural disasters. Having a secure, dynamic, common information-sharing platform has allowed Alabama to reach the next level in emergency preparedness and disaster management.