

Emergency Response Data Sharing Solution

By Craig Harvey, CIO, NVision Solutions

In 2005, Hurricane Katrina devastated the Gulf Coast, demanding immediate emergency response from county, state and federal relief agencies. Government and non-government organizations (NGOs) worked frantically to aggregate the best available geospatial data as a baseline to track the devastation and reconstruction efforts. Data providers quickly generated new data, including imagery, feature datasets and location-based content, both during and after the storm. Unfortunately, many counties lacked the high-resolution imagery necessary to perform accurate change analysis preceding the disaster.

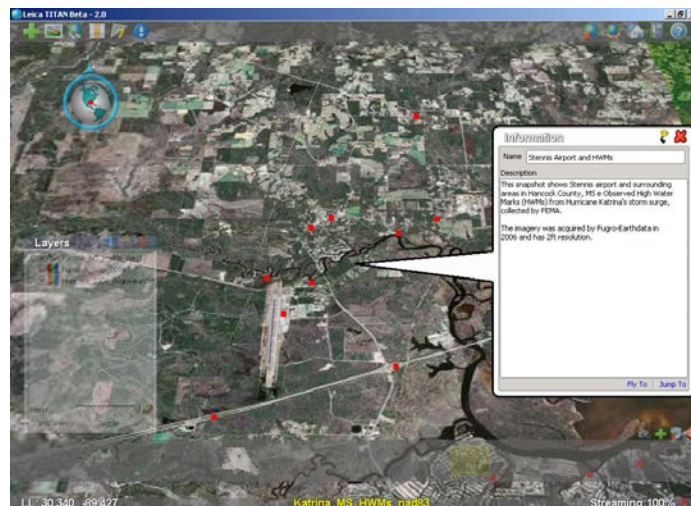
Operating independently, these agencies struggled to effectively communicate, collaborate and share data. As these organizations attempted to work together, their efforts were often complicated by licensing and data ownership restrictions. While federal relief agencies may download and share data without license restrictions, these benefits are not shared by other levels of the government or NGOs. Further complicating matters, no central repository for publicly shared data existed. Additionally, there were no tools for consuming geospatial information from various stakeholders. Without centralized data sharing, agencies continued operating independently, thereby inhibiting the possibilities of creating response solutions. Additionally, the lack of a data sharing forum further restricted, and in many cases excluded other organizations and individuals seeking to join the relief efforts.

NVision Solutions' Implementation of Leica TITAN

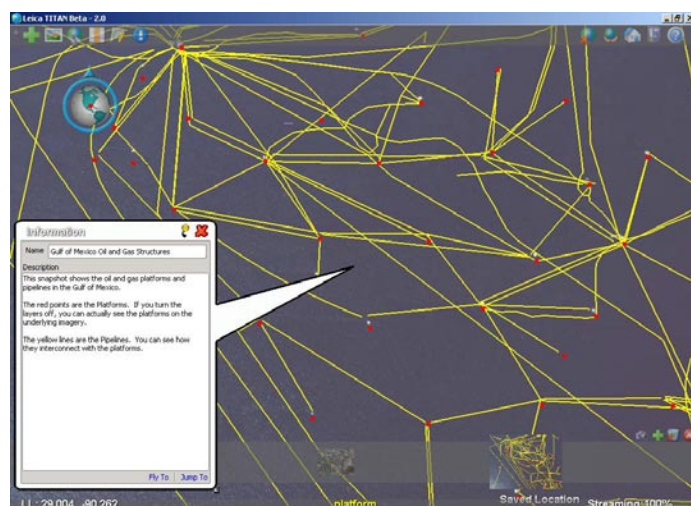
Headquartered in Bay St. Louis, within Hancock County, Mississippi, NVision Solutions understands the importance of having adequate imagery before and after a disaster. When Hurricane Katrina devastated the Gulf Coast, Hancock County faced the brunt of the storm's destruction. While Hancock County had an adequate amount of imagery prior to Hurricane Katrina, the county lacked a centralized data sharing structure. After the storm, NVision and many other organizations realized the necessity of one single, secure network for sharing data.

Employing Leica TITAN, NVision is now prepared for future emergency response situations. Leica TITAN is a scalable, rapidly deployable, data sharing solution that maintains a secure environment and ensures protection of ownership rights. Leica TITAN empowers users and communities to share geospatial data, web services and location-based content internal and external to an organization, and to a variety of client applications. All subscribers in the Leica TITAN Network communicate and share data through the freely downloadable and distributable Leica TITAN Client. The Geospatial Instant Messenger (GeoIM) enables users to chat, find, view and ultimately retrieve geospatial data and web services. Through the GeoIM, users publish data for others to access directly. Serving as the communication portal, the GeoIM enables authors and consumers of data to directly interact with one another. By addressing the social aspect of disaster data management, Leica TITAN promotes quicker decision making via real-time communication and collaborating on projects.

This screenshot shows Stennis airport and surrounding areas in Hancock County, MS. The red points are Observed High Water Marks (HWMs) from Hurricane Katrina's storm surge. This data was collected by FEMA. The imagery was acquired by Fugro-Earthdata in 2006 and has two foot resolution.



This snapshot shows the oil and gas platforms and pipelines in the Gulf of Mexico. The red points are the platforms, and the yellow lines are the pipelines.





The Leica TITAN Network enables a large number of stakeholders to rapidly share vast quantities of data in real-time, while protecting data ownership and data quality.

Users create a MyWorld, a geographically enabled personal space to upload their data, set permissions, and share content with other users in the network. Nvision recently created a MyWorld in Leica TITAN, featuring both vector and image layers of Mississippi, before and after Hurricane Katrina.

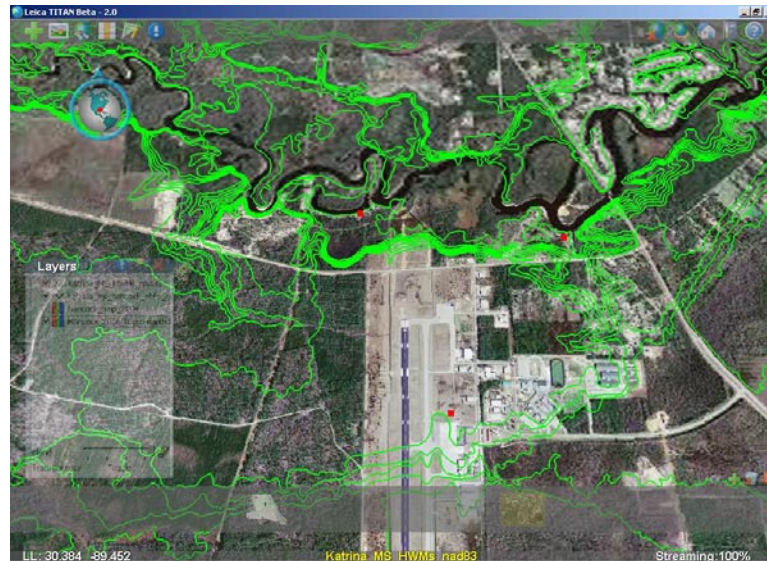
Maximizing Leica TITAN's Potential with a Leica TITAN GeoHub

Quickly recognizing Leica TITAN's benefits, Nvision has outlined plans to expand their usage by implementing a Leica TITAN GeoHub, a component that enables an organization within the Leica TITAN Network to create their own secure community within the Leica TITAN Network. A GeoHub enables permission-based data distribution to a network of subscribers within the Leica TITAN Network. When Nvision implements the GeoHub, users will subscribe to this community, with an Admin establishing the data sharing permissions for each subscriber. The GeoHub ensures secure, permission-based data sharing both on the individual and group level.

With a GeoHub and other geospatial processing and analysis capabilities in place, Nvision is prepared to seamlessly and rapidly enable new subscribers to share and access data. This data may then be distributed appropriately to participants and stakeholders in a disaster response initiative. By implementing a GeoHub, Nvision will establish the centralized tool for sharing, discovering, visualizing, accessing and retrieving geospatial information within Hancock County.

New users are instantly connected when they subscribe to the GeoHub. The Admin establishes each new subscriber's access permissions and volume

This snapshot shows Stennis airport in Hancock County, MS with two Katrina-related datasets. The red points are observed High Water Marks (HWM) from Hurricane Katrina's storm surge. FEMA collected these. The green lines are Advisory Base Flood Elevation (ABFE) contours. FEMA also generated these using the observed HWM, existing ground elevation, imagery and other datasets. The imagery was acquired by Fugro-Earthdata in 2006 and has two foot resolution.



sharing thresholds. With all subscribers accessing the same data store, NVision will update data to a single location with changes propagating to all subscribers. This subscription system relieves NVision of needing to utilize other dissemination mechanisms, such as transferring via FTP or DVD.

The GeoHub resolves licensing issues by facilitating data sharing while simultaneously protecting licensing and data ownership. Streaming data via subscription alleviates the danger of handing out copies of data via unprotected means, such as redistributable CDs and DVDs. Data is securely streamed only to those subscribers with access permissions, who ultimately are unable to redistribute that data. Leica TITAN optimizes data sharing while protecting ownership and promoting cooperation across organizations and stakeholders.

Planning for the Future

When a disaster occurs, it is followed by accelerated data acquisition, with vendors quickly producing and compiling geospatial information at high rates. By implementing a GeoHub, NVision has a tool in place for sharing vast quantities of data in real-time, making data acquired before, during and after the disaster available immediately. Leica TITAN also provides interoperability, supporting rapid consumption of data and web services into Google Earth, Microsoft Virtual Earth and WMS compliant applications.

Leica TITAN alleviates the day-to-day operational cost burdens of making and distributing vast numbers of CDs and DVDs to stakeholders involved in the response initiative, thereby increasing overall data management and efficiency. Ultimately, utilizing Leica TITAN's functionality maximizes the return on the data investment for all organizations involved.

Maximizing the data sharing capabilities and security implementations through the GeoHub, NVision Solutions will more adequately prepare Hancock County and the surrounding areas for swift emergency response. Redefining the standard for a data sharing and delivery system, Leica TITAN may fundamentally transform how organizations cooperate before, during and after a disaster.

For more information about NVision Solutions, please call +1 228-242-0010, or visit <http://www.nvs-inc.com>.

For more information on Leica TITAN, please visit www.lggi.com/titan.