

In Hurricane's Wake, PIXIA Emerges as Key Provider of Rapid Data Access and Dissemination Technology

Immediately after Hurricane Katrina devastated the Louisiana and Mississippi coasts in 2005, U.S. federal and local officials raced to obtain the information needed to assess the damage and deploy response efforts accordingly. With speed as its top priority, the U.S. government assembled a team of companies with the geospatial technologies capable of quickly acquiring, processing, analyzing and delivering high-resolution imagery of the stricken region – some 12,000-square miles.

This team was coordinated by the Federal Emergency Management Agency (FEMA) and Army Corps of Engineers. While several large companies such as URS Corp. and Leica Geosystems played pivotal roles in the success, a relatively small firm, PIXIA CORP., emerged from the event as an important new player in the geospatial arena. PIXIA provided critical technology that facilitated rapid dissemination of this imagery to key decision makers and emergency responders.

“We provided the FEMA contractor with the technological capability to rapidly ingest large amounts of post-event imagery into a service oriented architecture enabling high performance access via the Internet,” said Patrick Ernst, PIXIA Director of Business Development.

Based in Virginia just outside of Washington, D.C., PIXIA has developed a growing line of software products based on a revolutionary technology that makes raster imagery easier to manage and faster to use. PIXIA's encoding software converts large raster image files from any standard format and mosaics them into one contiguous image stored as a single file in an optimized raster file structure called nui™. Without relying on compression or specialized hardware, it intelligently indexes the data on the user's storage device to minimize both the ingest and retrieval times.

“Our goal is to help our customers handle the ever-increasing volumes of raster data being acquired as a result of the larger numbers and more sophisticated types of sensors that are being deployed,” said Ernst. “Our primary differentiators are scalability and performance.”

For the end user, this technology translates into two significant benefits. First, an organization can utilize the encoding software to load enormous volumes of aerial photos and satellite imagery onto a server in a fraction of the time it once took. And secondly, during image visualization and analysis, the unique file structure reduces time-consuming screen refresh rates – which can exceed one minute just to scroll from one part of a large image to another – to a second or less.

“Difficulty in ingesting and accessing large data files has always been an obstacle in the geospatial industry where a lot of data ends up sitting on the shelf,” said Karen Schuckman, Geospatial Technology Leader at URS Corp. “PIXIA makes it possible for

more users to get a hold of more data, and that's ultimately going to drive the market because organizations will feel like their investments in data are paying off."

This accelerated access to imagery makes the PIXIA technology appealing to analysts working on time-sensitive applications as well as to web-based imagery users paying by the minute for online connection time. The majority of PIXIA clients are organizations that have very large volumes of raster data which they want to warehouse more efficiently to provide ready access to their users, either locally or via the web.

The firm's contribution to the Katrina mapping project impressed the U.S. government enough to make PIXIA technology the foundation for a new rapid image access system to support hurricane response. Under contract with Rosettex Technology & Ventures Group in Virginia, the National Technology Alliance (NTA), in partnership with the US Geological Survey, National Geospatial Program Office, tasked PIXIA to build a prototype system based on open standards to evaluate the use of PIXIA technology to rapidly disseminate satellite and aerial imagery to analysts and emergency personnel to facilitate hurricane preparedness and response activities.

"Flexible, rapid and robust image access is a critical need for any organization that relies on raster imagery," said David Scott, Chief Operations Officer of Rosettex.

The NTA anticipates that approximately 50 Terabytes of high-resolution imagery of the U.S. east coast and Gulf of Mexico will be loaded into the system during this hurricane season. The pre-event imagery will be instantly accessible via designated U.S. government web portals, such as <http://iq.usgs.gov>. Officials anticipate using the system during and immediately following a hurricane to make post-disaster imagery available within hours after it is acquired by an aircraft or satellite.

This rapid image access system will leverage Web Map Service (WMS) open standards recently incorporated into the PIXIA software. The WMS technology is based on Open GIS Consortium specifications that enable a user, either locally or online, to query and retrieve image files in almost any format from one or more servers without a client plugin.

"WMS standards enhance interoperability between servers and end users, improving the overall accessibility of imagery," said Ernst. "This means that any user, whether they are running a full-blown GIS application or simply using a standard web browser, can access imagery from the server, regardless of the format in which that data is stored."

PIXIA is also in the process of ensuring compatibility with the Geospatial Data Abstraction Library (GDAL) and the Open Source Software Image Map (OSSIM), popular open source geospatial software packages. This will add yet another dimension of interoperability to the company's software.

With a rapidly growing market share in the geospatial arena, PIXIA has also set its sights on other industries that utilize large raster files, such as the medical imaging and computer gaming sectors.

“As imaging technologies continue to evolve in the geospatial realm and other industries, the data management challenges related to file sizes will only grow,” said Ernst. “Our technology will ensure that end users maximize the value extracted from these vast quantities of data.”