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[Feature]

Tech to the Rescue

With sophisticated technology and a generous heart, Pictometry helps people in need.

By Karen D. Schwartz

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Photo: Douglas Levere

Dan Pennacchia (left) and Stephen L. Schultz of Pictometry take great pride in using aerial imagery to help areas hit by natural disasters.

As the chief marketing officer for an aerial imagery company, Dan Pennacchia flies all the time. But one flight in 2004 ended up changing the course of the company.

On that flight, after meeting with congressional leaders in Washington, D.C., Pennacchia recognized that there was a disconnect between what government needed to help with disaster relief, the red tape required to obtain the necessary technology resources, and the funds available to do so.

Pennacchia also realized that his company, Pictometry International, could help.

During the short flight, Pennacchia fleshed out his idea into a living, breathing alliance designed to deliver critical technology to government agencies working to help federal disaster areas. Since its inception, the Pictometry Economic

Alliance Partnership has delivered high-resolution imagery for at least 15 disasters, including Hurricane Katrina.

Of course, Pictometry is a for-profit company, so there had to be money in the equation somewhere. But that's not a problem, Pennacchia explains, because in most cases business customers, such as insurance companies, hire Pictometry to capture disaster images anyway.

"We still make a profit, but then we give the imagery away to the government at no charge," he says. "We realized that we can do good and make a profit at the same time."

Technology for Good

The most recent example of Pictometry's work was in Haiti, where the company sent a plane to capture imagery — even without a paying customer. Over the course of 23 days, the company took about 50,000 images, which it made available to GISCorps volunteers who were working with United Nations personnel. (GISCorps is a humanitarian relief initiative sponsored by URISA, the Urban and Regional Information Systems Association.)

In Haiti, and in other disaster areas, the process starts in the air, with a pilot flying one of Pictometry's dozens of planes that carry high-tech cameras built for aerial imagery. Before setting off, the pilot consults one of three **HP notebooks** — an EliteBook 8530p, Compaq 8510p or Compaq 6730b, the same notebooks used by the company's salespeople and support engineers — to select the flight plans appropriate for that day. Once in the air, the Pictometry cameras capture tens of thousands of images, which are stored on a bank of removable disk drives in the plane.

Often, the photos are flown back to a safely located mobile processing station for analysis. (Haiti's imagery was processed in the Dominican Republic.) The disks are then loaded into a compact **SKB 4U Shock Rack Mobile Case**, which includes an **HP ProLiant DL370 G6** server, an **HP ProCurve 1810G-24** network switch and a **Linksys WRT610N** router, as well as an **HP TFT7600**

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For its relief efforts in Haiti, Pictometry spent 50 hours in the air over 23 days capturing

rack-mount keyboard and monitor. Once the images are loaded, Pictometry employees, using [Acer 8940G Aspire notebooks](#), connect to the images via a network switch. They can then view images that are measurable and properly located.

50,000 images — which took up 200 gigabytes of storage.

“In some disaster scenarios, you might have building footprints from before the damage, and overlay it on the image from afterwards and see where the houses used to be,” explains Stephen L. Schultz, Pictometry’s chief technology officer.

At that point, the images are ready for transmission to agencies that stand ready to help with relief efforts. If Internet access is available in the area, the images can be sent online. If not, the images can be loaded back onto removable drives and storage, and shipped to the desired location. Those drives include [LaCie firewire drives](#), or for extremely large deliveries, network-attached storage units such as the [Buffalo TeraStation Live external hard drive](#).

In other cases, the data is transmitted directly back to company headquarters in Rochester, N.Y., where Pictometry has processed more than 130 million images since 2000. The Rochester data center has more than a petabyte worth of [NetApp FAS3160](#) and [FAS3070](#) storage arrays, used for raw data storage, in-process storage and finished product storage.



Also in the data center are [Netgear ProSafe FSM726](#) and [FSM7352](#) switches, which Schultz says let the company aggregate its network segments into its main backbone switch in a very cost-effective manner.

Although the amount of storage and processing power the company has may seem like overkill, it's not: “Our maximum throughput is 1 million images per day, and our throughput in a season is 30 to 35 million images,” Schultz explains. “With the size of each image, that means we’re moving, processing and storing 48 terabytes of data each day. That places a huge demand on your network and storage.”

Moving Forward

Pictometry’s relief efforts have been so effective that it sparked the development of other offerings, also designed to help organizations mitigate

emergencies.

“After the Columbine massacre, we realized that there was a need for schools to capture the exterior and interior of buildings and campuses,” Pennacchia explains.

The product that resulted captures the blueprint of an institution and overlays it on Pictometry’s imagery. Called Critical 360, it uses much of the same technology that Pictometry uses in other products, and offers first responders the ability to quickly understand when they reach a site what the layout is and where they should focus their efforts.

Pictometry’s Go-To Technologies

Pictometry International CTO Stephen L. Schultz says the following technologies are most crucial to his business:

- **Network infrastructure.** The older switches Pictometry used before it moved to the Netgear switches just couldn’t keep up. The ability to segregate the different network pipes and allocate bandwidth to the people processing the images is very important, especially as requirements scale up.
- **Data storage reliability.** Pictometry buys its storage systems in 200 terabyte chunks, and has more than a petabyte of data stored so far.
- **Computing power.** The company’s system is built for scalability. In one 12-month period, Pictometry went from 16 backplanes to 50. The HP servers offer a lot of computing power in a small space and let the company add more units easily as it needs to scale its processing power.

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