



## The Eyes of the Airport

**Midway Airport and Boeing demonstrate state-of-the-art video surveillance technologies**

**By Bill L. Stuntz**

**I**n our post-9/11 world, airport transportation agencies are faced with difficult challenges of safely transporting large numbers of people with minimal inconvenience, all while identifying legitimate threats.

A number of technologies have been in the news and are at varying levels of development and public receptivity. Some of these include advanced X-ray machines, systems that allow advanced passenger registration, retinal scanning and facial recognition systems. One cost-effective solution that is gaining wider acceptance is video surveillance technology. With the introduction of revolutionary technologies, the video surveillance industry is experiencing dramatic change. The move from analog to digital has allowed video to be managed, analyzed and distributed over the IT infrastructure in important new ways.

### **TODAY'S VIDEO SURVEILLANCE**

Until recently, video surveillance was limited to CCTV monitoring or onsite security personnel. With the advent of IP-based digital video surveillance, greater access and delivery of video images is possible. By using new video compression and bandwidth management tools, people at all levels are receiving video and information via customized user interfaces that are appropriate to the audience.

For example, local security personnel can view very high-quality frame-based MJPEG video, both live and stored, while decision makers at headquarters can receive video using stream-based compression that provides better action images to backtrack a suspect's time in the airport. First responders and police can receive the same video wirelessly via

PDA's and handhelds to locate a specific person or object using highly compressed MPEG-4, and other departments and third parties can receive images appropriate to their specialized needs.

Today's surveillance technology provides the appropriate image compression and bandwidth management capabilities based on the need and system requirements, and can accommodate some system limitations. Archiving also can take place at different frame rates or bit rates based on retrieval patterns at central, local and remote locations, including redundant off-site storage for disaster recovery. Important event clips can be automatically stored at secure locations in the highest resolutions.

This strategic use of the Internet also provides a cost-effective alternative to today's proprietary surveillance standards: VCRs and DVRs. Using digital Internet

technology, video surveillance solutions provide greater benefits, such as storage and retrieval capabilities, at no greater cost. As new technologies are developed and refined over time, video surveillance solutions based on open platforms and standards will provide greater integration and longevity. Scalability to manage tens to thousands of cameras also is important.

To manage this type of solution, flexible administration is important. Solutions can be designed to complement network capacity and requirements, as well as provide as much video as needed to each point. Authorized users on the network—at any local or remote location—can access, view and control any camera on the network. Online storage costs are continually becoming more affordable, especially when compared to physical storage space.

## **A TYPICAL AIRPORT SCENARIO**

In a typical airport scenario, when a threat is perceived, the Transportation Security Administration has about 2 1/2 minutes to determine if a threat is real before a full airport shutdown occurs. A false alarm can create significant delays, unnecessary concerns and considerable expenses. Unfortunately, these situations are all too common.

This is where video surveillance can come into play. Quick access to stored video can determine who triggered the security threat and can show a video history of the person's activity to verify the threat. Preventing a complete airport shutdown through fast verification of a threat can save millions of dollars.

When incidents occur, technologies are needed to identify and alert a person of authority. This information can then quickly be shared with computers and PDAs to identify the threat, access real-time and archived video to determine if a threat is real, and contain or respond to the threat.

These technologies—available today—are part of the next wave of video surveillance, which may include video camera placement in airplane cabins and cargo holds to monitor what happens in these areas when the plane is grounded. Since an airplane is most vulnerable during this time, video surveillance can help identify and confirm a threat and impel action.

## **AN "AIRPORT OF THE FUTURE"**

One successful use of video surveillance technology is Midway International Airport in Chicago. The Boeing Company is partnering with Midway Airport to demonstrate the capabilities of numerous "Airport of the Future" systems, including Visual Security Operations Console, a video security system integrated with PDA technology for wireless uploading of images for field operations staff.

As part of the partnership, Boeing created a 3-D model of the Midway passenger checkpoint, while gathering information to enable future modeling of remaining airport facilities. This modeling was used as a basis for VSOC, enabling users to visualize operations against a layout of the airport. Forty-four cameras were installed around the passenger checkpoint area for enhanced security monitoring. Users were able to use this equipment via two VSOC workstations in the Midway control center and at the TSA supervisor's station at the passenger checkpoint.

Wayne Esser is director of program development for Boeing's Homeland Security and Services division and has been working with Midway Airport since early 2004. Boeing's objective for Midway Airport was to implement an integrated solution for terminal security that facilitated a quick response to a security breach in order to avoid a terminal shutdown and reduce the length of time for a terminal shutdown when it does occur. It was important for Boeing to demonstrate that it could isolate an incident and track the movement of a suspect by quickly gaining footage. This solution also required the ability to access historical video quickly in a fairly automated manner.

On Nov. 15, 2004, the new VSOC solution, while still on a trial run, was called into service when a security incident occurred at Midway. The security incident took place at the passenger security checkpoint area and required the full-scale evacuation of the terminal building. It quickly became evident that there was difficulty with the existing video surveillance system. It was cumbersome to access, images were unclear, and it was not directed at all sources.

An airport official then asked if Boeing could recall video of the prior passenger using the new VSOC demo unit that was being tested. Images of the inci-

dent were quickly recovered and saved to a PDA. Using the PDA, law enforcement officials and TSA quickly responded to the incident. The VSOC security system shortened the airport shutdown.

The steps that were taken to correct the situation thoroughly impressed airport officials at Midway.

"If it hadn't been for the Boeing VSOC solution, it would have taken much longer to resolve the situation," said John Roberson, commissioner of Chicago's Department of Aviation. "Using this technology, we were able to minimize the impact on airport and airline operations."

The airport has achieved significant progress, and Boeing aims for the system to be fully operational before the end of 2005. The partnership between Midway and Boeing has moved the airport closer to its goal of significantly reducing the need for terminal shutdown, Esser said.

## **FINDING THE RIGHT SOLUTION**

While many solutions are under debate for providing airport security, the state of today's video surveillance technology provides a strong component that should be considered. Midway is one example of how advances in video surveillance technology can benefit airport security, as well as other industries, using a suite of server-based technologies for management distribution and storage of video surveillance in a networked environment.

This combination of commercial off-the-shelf components allows systems integrators to take a building-block approach and rapidly deploy scalable, feature-rich network surveillance systems comprising up to thousands of cameras and viewers. Using an open architecture platform, systems integrators can easily integrate their choice of third-party technologies, such as cameras, encoders and video analytics, while designing systems that evolve and scale as new technologies are introduced.

This approach provides the most flexibility using tried and true technologies, with the ability to integrate new innovations as they occur and are refined.

---

*Bill L. Stuntz is CEO of BroadWare Technologies, a platform provider for developing applications to view, store and manage video information in a networked environment. Previously, Stuntz served in a variety of CEO capacities for companies in the wireless data, electronic instrumentation and data acquisition industries.*