

Under observation

This automated incident detection system is on the pulse. Improving safety and service at a reduced operational cost, it allows fast and efficient incident response and will ultimately be saving lives in the state of Texas

It is 23.00 and a tractor-trailer truck has jack-knifed, causing a car to crash while maneuvering to avoid it. Emergency services are skilled at managing these situations, but knowing as quickly as possible that the incident has occurred can be a matter of life and death.

During peak times, in slow traffic, motorists will frequently dial 911 to report an incident. However, during non-peak times when traffic speeds are typically higher, incidents are often more serious and unfortunately less likely to be reported. Keeping the roads safe and traffic flowing is the NTTA's (North Texas Tollway Authority) commitment to the 1.2 million customers that travel along its 54 miles of toll roads.

"Beginning in 2002, the NTTA had taken steps to improve its response to traffic incidents. However, opportunities to make real-time, automated incident detection more efficient were elusive," explains Rick Herrington, the then assistant executive director for the NTTA and now national director of technology services for HNTB Corporation. "NICE Systems, a company whose intelligent video surveillance solution,

NiceVision, was being used at airports provided hope."

NiceVision combines high-performance digital video recording with advanced video content analytics, including motion and abnormal event detection, intrusion detection, and vehicle and stationary object detection. It automates tedious detection tasks, enabling surveillance teams to prevent or respond to incidents in real time, and effectively investigate and reconstruct situations for subsequent analysis or evidence provision.

The NTTA asked Nice to join the SecureNet and HNTB team, the NTTA's security systems integrator and general engineering consultant, respectively, to advance NiceVision's capabilities for monitoring high-speed traffic environments. The result has been a tool that enhances awareness by alerting the NTTA's Command Center as soon as an incident takes place, providing all of the relevant information and guidance while keeping track of the current live situation.

NTTA's Command Center manager, Marty Legé adds: "We see an average of 200 traffic-related incidents each week on NTTA roads. During the initial pilot the Command Center

experienced a 99 percent detection rate. However, false alarms ranged between 10 to 20 on each camera per day. By the end of the pilot, NiceVision was able to effectively reduce this to 10 while maintaining the 99 percent detection rate. But we wanted to go further and set a target of five or less false alarms on each camera per day."

Having implemented a successful pilot, the NTTA extended the NiceVision solution to integrate with over 200 traffic surveillance cameras positioned across 48 locations.

INCIDENT MANAGEMENT

A team of 20 personnel operate the 24-hour seven-day-a-week NTTA Command Center. Once NiceVision detects an incident, an automatic alert is sent to the service specialists who then use a pan-tilt-zoom camera to assess what resources are needed to manage the incident, providing first responders with vital information, such as the fastest route to the incident, any injuries or if there is a spillage of hazardous material.

"Prior to NiceVision, the usual response to any incident was to call the police, fire and ambulance services, but often only one or two of those services are required," explains Legé. "By assessing the situation and calling only the appropriate services for the incident, vital resources are not being wasted, they are able to save lives elsewhere and at the same time the NTTA is saving a considerable amount of public money."

Once an incident is detected the capability to orchestrate a coordinated response is an important benefit of the system. A recent scenario using NiceVision to resolve a crime in progress was an assault and attempted kidnap on the President George Bush Turnpike. Service specialists were able to observe the fleeing criminal, calling ahead to police from multiple jurisdictions to position patrol vehicles and deploy measures to halt the vehicle and make the arrest, thereby making the incident safer for the police and other tollway users.



↑ NiceVision is increasing the safety, reliability and service of the NTTA's existing toll road system

➔ Pan-tilt-zoom cameras assess what resources are needed to manage incidents, providing vital information, such as the quickest route, extent of injuries or spillage of hazardous materials



➔ NiceVision also works in conjunction with DMS, providing motorists with real-time information



➔ Awareness is enhanced in the Command Center

Kelly Black, senior account manager for SecureNet adds: "The NTTA is benefiting from additional uses of NiceVision technology across other departments, such as risk management, engineering and maintenance. For example, if a maintenance team has laid out traffic cones, the system can be programmed to identify them as part of the overall landscape. If these are moved, an alert is raised for the service specialist to assess the situation. The technology has also proved effective in maintaining roadside lighting, with the system sending an alarm when a light has failed. The service specialist captures the screen, emails it to the maintenance team, who then make the repair."

EXTRA VALUE

NiceVision also works in conjunction with the NTTA's dynamic message signs (DMS). The DMS are used to display travel times and inform customers of incidents up ahead. NiceVision assists the service specialists in verifying that the DMS are working properly.

As Legé explains, the technology is also able to detect movement in unauthorized areas: "We don't want people wandering on our roads: whether they have stopped due to a mechanical problem or are walking along the roadside, NiceVision will alert

the Command Center to people moving in unsafe areas, enabling the service specialist to quickly review and observe the scenario and assess what actions are necessary."

An extension of this technique helps the NTTA enforce safe working practices. Tollway maintenance and construction workers are only permitted to work on existing NTTA roads during non-peak hours. Work-in-progress areas are analyzed, and if the site is not cleared within the agreed time an alert is raised. For some contracts this provides the basis for enforcing penalties.

The project is expected to double in size by 2007 with over 400 traffic surveillance cameras covering the expanding NTTA toll road system. The NTTA has created a highly efficient and productive Command Center, and will be able to manage the expansion of its toll road system without dramatic increases in Command Center staff. "If we didn't have NiceVision we would need 15 people just to monitor the traffic surveillance cameras," states James Hofmann, NTTA's director of information technology.

"NiceVision and SecureNet are a formidable team. Working together, they have allowed us to beat our target of five or less false alarms per camera, usually operating at two to three per camera per day and have even reached

an average single false alarm per camera per day," Hofmann adds. "By adding HNTB to the team, we have been able to implement a wireless solution at one location, with the plan to roll-out further wireless locations, as well as move from analogue to IP monitoring in the near future."

Hofmann continues, "The team has worked together from the inception of the project, through the design of the software and associated civil design plans, to the construction of the infrastructure and systems integration. The result has been an exceptional system that provides further benefits to our customers in exchange for their tolls."

The toll road landscape in the USA is changing and NiceVision is helping the NTTA remain a leader in the industry. Hofmann concludes: "The NTTA actively looks for opportunities to continue its role as a leader in the sector. By leveraging NICE's automated incident-detection software, the NTTA has set the benchmark for utilizing technology to increase the safety, reliability and service of an existing toll road system." ■

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