Nassau County Fights Criminal Firearm Activity with latest technology: 
Milestone open platform IP video enables integration with 
ShotSpotter gunshot detection and the HawkEye Effect digital mapping

With the goal of driving down gun violence in the Roosevelt-Uniondale area of New York, the Nassau County Police Department wanted to leverage its existing Milestone XProtect® video surveillance solution and its open platform technology for the next step in safety. To help deter gun crime and assist in quickly solving firearm-related cases, the department focused on enhancing the capabilities of its street cameras. The answer was to integrate its existing gunshot detection system with real-time visual verification. Incorporating ShotSpotter’s gunshot location systems and The HawkEye Effect sensor mapping and integration to trigger Milestone XProtect, the department was able to control the pan-tilt-zoom capabilities of the cameras, synching audio and video to map and view the exact incident location within seconds of a shooting.

“The key to enhancing the ShotSpotter program was to expand the functionality of our already deployed Milestone system with an integrated solution. The HawkEye Effect was vetted and chosen to perform the machine-to-machine integration. It was integrated seamlessly with Milestone and we now have a scalable, reliable 24-hour police watch with the ShotSpotter program for a safer county.” – Detective Lieutenant Ken Strigaro, Nassau County Police

The challenge: The Roosevelt-Uniondale area of Nassau County, New York, had a large number of shooting incidents – both reported to the police and unreported. Authorities believed a new system that could prove cost-efficient to launch and monitor, to track gunshots and result in evidence and convictions of those committing crimes, would benefit the community immensely. How could the police department integrate surveillance camera video to actionable information for real-time incident response?

The solution: Tap in to the 150 members of the Milestone Solution Partner Program for a gunshot detection and location solution from ShotSpotter and the HawkEye Effect. Utilize ShotSpotter’s sensors to locate gunshots within the coverage area of the deployed surveillance cameras, and the HawkEye Effect to triangulate the sensors, map the location, direct the video surveillance cameras to the location and notify first responders while recording the video. The HawkEye Effect correlates a
gunshot’s location with the appropriately mapped polygon and sends the information to Milestone XProtect, which controls the pan, tilt and zoom capabilities of the video surveillance cameras.

Milestone Channel Partner EIA Inc. designed and installed the gunshot location system to meet the Nassau County Police Department requirements for automated gunshot detection, location, reporting and video verification. The flexibility of the Milestone XProtect Corporate video management software automatically adjusts the video recording rates to the maximum number of frames per second to capture gunshot incidents in the greatest detail.

The advantages: The system not only detects gunshots, it is able to differentiate between fireworks or backfiring vehicles, it locates the gunshot, it automatically plots the incident on a map, it turns the surveillance cameras to the location and possible egress points, records the incident and notifies law enforcement personnel. This all occurs within 10 seconds of a gunshot. Information retrieved from the camera and the location service is processed through Milestone XProtect, available for evidence sharing during case development and prosecution.

From 2003-2009 there was an unsettling rise of gunshot reports in the Roosevelt-Uniondale area of Nassau County, County Police were in search of a way to more efficiently monitor and respond to criminal activity and violence related to firearms. Along with the increase in these crimes, there was an equally disturbing trend: many of these incidents were not being reported - either out of fear or because residents had become immune to the sounds, turning a deaf ear to events.

In 2011, police and county officials began planning an intricate arrangement between the already deployed cameras throughout the county, networked through the Milestone XProtect video management platform, and the soon-to-be-installed ShotSpotter technology. New York-based EIA Inc. (www.eia.us) recommended implementing the HawkEye Effect to coordinate ShotSpotter’s gunshot locations with the Milestone video platform after an extensive Milestone ecosystem search for the comprehensive solutions, which would provide real-time visual verification of reported incidents. As a Certified Milestone Solution Partner, the Hawkeye Effect has been integrated and tested with XProtect.

Since working with and maintaining the Nassau County Milestone setup for years, EIA had the expertise to design the integration of the gunshot detection through ShotSpotter with the PTZ cameras selectively deployed throughout the county.

“Nassau County was looking to use the ShotSpotter deployment as a deterrent, but when a gunshot is detected, the cameras turn to the location ShotSpotter has triangulated via already established area
polygons HawkEye has mapped to help in the investigation of a shooting,” said David Engel, CEO, EIA.

ShotSpotter uses a series of sensors placed throughout the area to be monitored. The software triangulates a gunshot location as a GPS coordinate and provides the nearest street address. HawkEye Effect translates this information and creates a series of polygons across the area where the shot was fired. The polygon graphics relate to either a camera preset position in Milestone XProtect or to an area that cannot be directly seen by the camera but may be a point of escape from the area where the gunshot was fired.

If the coordinates of the shot fired are outside the camera view, it redirects to an area off a major avenue that is approximately where the shot was fired, on the idea that it might provide a view of the incident as it happens or pick up someone fleeing the scene. If a victim is injured at the scene, the authorities are able to see it in the video and report the injury immediately, speeding up response time.

“By integrating mapping into the Milestone XProtect® Smart Client, we can almost immediately have police eyes on a target through the very intuitive interface,” stated Jeff Blair, CEO for the HawkEye Effect. “Nassau County uses the HawkEye mapping technology, but all the camera interaction is handled by the Milestone platform.”

Multiple cameras work together to cover the entire incident to provide visual verification and enhanced situational awareness in the event of a gunshot. The HawkEye Effect’s GPS plots quickly determine the area and assign tasks to each camera. For example:

- Camera 1 has a direct line of sight at preset 3.
- Spin Camera 1 to preset 3.
- Camera 2 has a redirect area, so it can’t see that shot but has a view of the next major intersection at its preset 1.
- Spin Camera 2 to preset 1.

“Without Milestone this system wouldn’t have been possible,” continued Engel. “The HawkEye gateway has a Milestone link service, via the Milestone Software Development Kit (SDK), for an integration that is able to communicate to the Milestone video management software, feeding it different presets to turn the cameras. We had to carefully map out the geography of the area surrounding the camera and, using Milestone’s open program interfaces with the HawkEye Effect mapping, create an integration with ShotSpotter that would tell Milestone XProtect which cameras to move and where, when a gunshot was detected. This process is not possible in closed systems.”
“Milestone’s open platform architecture is exceptionally easy to work with, providing the means, tools and resources to enable further innovation. As Milestone constantly expands, the software provides the keys necessary to leverage the resources that customers have already invested,” stated Blair. “Milestone makes it easy for partners like us to code our technology in a forthright manner, allowing end users to benefit from the latest and greatest software and hardware integrations for comprehensive deployments such as this in Nassau County.”

The ShotSpotter system sends coordinates and categorizes the bullet with information about the type of bullet and number of shots fired. When a shot is detected, 911 center operators are provided a pop-up video display on the screen with this vital information. At the same time, a copy of the information is sent to the HawkEye Gateway to determine the location, coordinating the camera views through Milestone XProtect.

“We have an open API and can share certain data with any analytics, any IP VMS, anybody that requires the data,” states Gregg Rowland, Senior Vice President at ShotSpotter. “Any information, whether it includes longitude, latitude or time can then be used - in the case with Milestone XProtect, by programming what exactly you need from it once the information is received. These cameras are geo-referenced by the HawkEye Effect, so if you say ‘Gunshot happened on this corner, send closest camera to that location,’ the PTZ directly lines up to where the event happened and turns every other camera to egress routes. There is a lot of creativity with what we do with the data and the entire system after we retrieve it.”

The flexibility of the Milestone open platform allows customers to select a variety of applications developed by the members of the Milestone Solution Partner Program to meet diverse and changing needs. These solutions integrate video management with analytics for counting cars or people, with laser scanners for unique perimeter control, with access control or HVAC systems and RFID technology. The possibilities are endless with an open platform.

www.milestonesys.com