



The Open Platform Company

Whitepaper

How Cities Save Money and Improve Surveillance with Open Platform IP Video Surveillance

A guide for public officials on the cost advantages and effectiveness of open platform IP video surveillance solutions in metropolitan applications.

Prepared by:

Eric Fullerton, Corporate Chief Sales & Marketing Officer, Milestone Systems

Stephen Russo, Director of Physical Security Technology, IBM Security Services

25 September 2010

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Introduction

Cities around the world face a common dilemma: how to improve public safety while keeping budgets under control. Fortunately, new developments in video surveillance technology are enabling cities to accomplish both goals. By adopting open platform IP video surveillance solutions, cities can:

- Achieve superior and more cost effective video surveillance
- Use COTS (commercial off-the-shelf) components and third-party applications to build best-of-breed surveillance systems at a substantial cost savings
- Integrate public safety surveillance solutions with other security systems for a single point of control
- Video enable access systems and other security systems with situational awareness to save money and speed up response time
- Protect against future obsolescence
- Easily and cost effectively expand video surveillance operations as needs grow

For many cities, this shift from traditional analog (closed circuit television or CCTV) technology to open platform IP video surveillance comes just in time. They've already seen significant cost-savings and performance benefits from deploying IP-based network solutions for an array of other city services. Now it's time to do the same for their video surveillance and public safety systems. Particularly since many open platform IP video surveillance solutions enable incorporation of existing analog equipment, preserving the significant investment already made in existing video surveillance systems.

As with any technology shift though, a critical consideration is the selection of a solution that provides a strong ecosystem of solution providers and system integrators. A strong ecosystem ensures more choice, better interoperability stronger support, and a more reliable future.

This white paper shows how cities are saving money and improving results by migrating to video surveillance systems that are IP-based and built on open platform video management software. We discuss what to look for in an open platform IP video surveillance solution. And we explain how video surveillance is moving beyond “just surveillance” and transitioning to a world where video-enabled applications provide situational awareness to help improve effectiveness, speed up incident response time, and reduce damage to people and property – all while helping cities manage public safety budgets.

Why IP technology

One doesn't have to look very far to realize how quickly IP-based systems are becoming the standard for modern video surveillance. Governments and businesses all over the world are adopting them.

Cities implementing open platform IP video surveillance technology are seeing:

- Significant cost savings from proven networking technology and practices
- Improved image quality and situational awareness from digital imaging and video analytics
- Easy centralization of video surveillance operations and integration with other systems

Let's take a deeper look into each one of these advantages.

Potential costs savings from proven networking technology and practices

Networking technology using the Transaction Control Program/Internet Protocol Suite (commonly known as TCP/IP and shortened to IP) has been around since the 1970s. The Internet is based on this protocol. Cities and businesses around the world use IP to network their computers, servers and data storage. It's a reliable, proven technology, and because so many companies offer products for it, competition holds prices down on most standard components, software and services. In addition, most cities have their own IT department, as well as a variety of trusted vendors and service providers, so they already have a maintenance and support system in place.

The ubiquity of IP makes adding a new IP technology such as IP video surveillance easy. The biggest differences (and most important investment) will simply be the IP network cameras, applications, and video management software used to manage, control and integrate the video surveillance system with the rest of the network. Everything else that is required is standard IT equipment.

IP technology provides all of the following advantages

Easy camera installation and movement

The advantages of switching to IP networking technology are immediately apparent. An IP network camera plugs into the same cost-efficient standard Ethernet cable or wireless technologies (such as IEEE 802.11b) as a computer or router. Changing camera placement is simple – just remove and plug the camera into another network jack somewhere else. Wireless cameras can be even easier to move, depending on the range and extent of the wireless network. Wired IP network cameras can be powered by Power over Ethernet (PoE). This technology enables a

camera to be connected and powered by the same cable used for network connection. This drastically simplifies installation and reduces costs by eliminating the need for power outlets at camera locations.

Improved scalability

A strong advantage of IP network-based video surveillance systems over analog video systems (and most DVR/NVR setups) is that they scale easily from one to thousands of cameras in increments of a single camera. This makes them ideal for metropolitan systems that grow in spurts. Installation can be done in stages and, through the use of video encoders, incorporate existing analog equipment to create a hybrid system. Many cities discover it is less expensive to switch to an IP video surveillance system rather than pay for a 'forklift' upgrade that updates their existing system with the latest analog technology.

IP networking also makes it possible to integrate non-police cameras that belong to government agencies and the private sector into a city's surveillance system. This can include cameras such as those used in city buses, businesses, public schools, subway stations, housing projects and other places. This is a great way to scale a city's surveillance system with minimum investment in cameras.

Better information sharing

Using standards-based IP networking enables leveraging existing technology for important information system practices such as networking security, levels of authorization for access, data backup, and audit tracking (knowing who accessed the system and when they did). An important aspect of this for cities is information sharing, particularly between first responders. Networking cameras with IP technology can turn a closed system into something that can be accessed through a network or the Internet (with appropriate authorization) anywhere in the city. Emergency response personnel in different locations throughout a city can all view the same video feed simultaneously through whatever network-enabled device they're using – desktop computer, laptop, or PDA/smart phone (such as a Blackberry® or iPhone®). Video clips can be sent over the Internet just like any other file. For instance, security staff at a courthouse could send a video of a suspicious loiterer to city police in seconds. Searches by time or incident are also easy over IP networks, enabling fast information retrieval on authorized devices for intelligent response or evidence.

More storage options

Being able to use IP-based systems for storage makes it easier to set up redundant systems and transfer video to off-site storage. This can be important for cities concerned with ensuring continuity in the case of a power failure or natural disaster. Even maintenance is much less expensive. Compare a modern analog system's

"black box" proprietary DVR that can cost \$5,000 to replace with high capacity server disks used in IP data storage that cost as little as \$150.

Secure Interoperability

With the move to IP-based security and video surveillance, an increasing number of cities worry that their once closed systems are now exposed to the same Internet threats (virus attacks, intrusions, data loss, and other malicious acts) that standard IP-based IT systems face. Cities are also concerned about locating network ports in exposed areas around the city. Such worries can be quickly addressed with logical security solutions designed to protect systems from both inside and outside threats.

Improved image quality and situational awareness

In response to the growing popularity of IP video surveillance systems and declining interest in analog cameras, manufacturers are devoting research and development dollars to the much more promising possibilities of IP network cameras. The result is an enormous variety of IP network cameras at outstanding values. This includes everything from 360-degree megapixel cameras providing ultra-sharp images to tiny wireless cameras for covert operations. Multi-megapixel models are available that can deliver full-motion digital video at analog camera prices. Cities can even purchase high-performance multi-sensor cameras (e.g., 8 megapixel quad-sensor 180° and 360° panoramic cameras) that can actually reduce that cost per unit area under surveillance by covering more area with fewer cameras.

Here are some of the many advantages of digital imaging and video analytics.

Better image quality

Just as there's more innovation in IP network cameras, there is also more quality in the imaging. Because they are digital, IP network cameras can provide up to 16 times the resolution of traditional analog cameras. A great deal of this quality results from how the images are created. Analog images are composed of lines, and each image is formed from two interfaced fields. Unfortunately, this means when there's a lot of movement, images become blurry. IP network cameras, on the other hand, use digital pixel image sampling to ensure an entire image is captured moment to moment. This enables crystal clear images even when there is a high degree of motion. These improved quality images can increase the utility of video as evidence and result in higher conviction rates. As IP network cameras continue to improve, the gap in image quality will continue to grow. Already IP network cameras are capable of providing rich enough detail to allow reading the numbers on a license plate or a person's badge.

Superior zooming

For superior digital zoom capabilities, IP network cameras are available with pan/tilt/zoom (PTZ) controls. These cameras enable staff to remotely take control of individual cameras and zoom in on an activity. Some cameras' zoom capabilities enable reading a cigarette pack from as far as 1,000 feet away. For example, one Illinois city police department reports police being able to identify the face of a wanted suspect through a glass door two blocks away.

Enabling video analytics

IP network cameras are a key component in a revolutionary new capability in video surveillance: video analytics. Forget simple motion detection and all its inaccuracy and false alarms. Video analytics (also referred to as video intelligence, video content analysis, and situational awareness) uses advanced software to detect, recognize and analyze objects and events from digitized video. Video analytics addresses a major limitation of older video surveillance solutions – they were only as good as the people watching the monitors. Research has shown that although nothing is more accurate than a trained human eye, a human observer's effectiveness degrades quickly after short periods of time and as the number of cameras increase. In fact, people lose their ability to discern significant activity often in just 20 minutes of watching monitors. *Software doesn't*. Software is always watching, always analyzing, always ready to sound an alarm or send an alert.

Real-time, actionable intelligence

The technology for video analytics has improved over the past few years, improving its ability to provide real-time, actionable intelligence in security installations. At Liberty Island in New York, for instance, video cameras feed into a computer system running video analytics software that analyzes the imagery to automatically provide staff with alerts of suspicious events, such as abandoning a bag or backpack. The video analytics software can even distinguish between ferryboats which are allowed to approach the island and private vessels which are not. The software can also count people to detect if somebody is trying to stay on the island after closing or if people are grouped too tightly together – an action that might indicate a fight or gang activity. Ever more advanced programs providing behavior analysis are becoming available. These actually learn normal human patterns in a location such as a street corner or public landmark. They can highlight and log behaviors of individuals who act or move in unusual ways. For example, the French government uses technology that can distinguish sightseers from the 40 to 50 people who try to climb the Eiffel Tower each year based on the way a would-be climber acts.

Some vendors provide video analytics solutions that provide actionable intelligence through network-based video analytics that perform efficient data analysis of video

sequences either in real-time or recorded video. Based on open standards middleware (software that connects other software together), such a solution enables monitoring and analysis of real-world events via sensors (such as video cameras, radar, and audio inputs, as well as transactional data integration). These video analytics solutions can not only analyze video and generate alerts for pre-defined behaviors, but also generate metadata (such as the size and color of an object, its trajectory, the time it appeared, and the length of time it existed, to name a few) for events happening across the field of view of all cameras in an installation. This creates a full index of events that allows an operations person to easily perform searches. For example, a person could search for all the times a blue van was in a particular area of the city between 7 a.m. and 8 a.m. A full event index is extremely powerful for both shortening the time it takes to do investigations and for finding patterns and trends in long periods of time to understand where a city may have threats and vulnerabilities. This turns video surveillance from a passive reactive system into a proactive preventive system, improving the efficiency and effectiveness of public safety personnel in investigations as well as allowing them to become a more preemptive force. Using these advanced tools to search and data mine millions of events per month, staff can transition from spending the majority of their time monitoring to instead preventing and responding quickly to incidents.

Easy centralization and integration with other systems

Today's sophisticated IP video management solutions enable the centralized control and management of virtually an unlimited number of cameras. Appropriately set up, the system can enable authorized staff to access any connected camera or video storage server in a city's network. Instead of having to position video monitoring stations in each building or facility, all the video monitoring for an entire city can be done from one location. This can significantly reduce the space requirements for video surveillance operations and improve surveillance staff communication by keeping them in one location rather than spread out all over the city. It can also enable a city to monitor more sites with fewer staff.

Advanced IP video management solutions offer the following advantages.

Advanced alerting capabilities

Along with centralization, many IP video management solutions include the ability to direct alerts to specific people or devices. Such alerting capabilities enable faster response to incidents. The ability to access remote cameras through the software is also important in enabling more intelligent response. This enables staff in any location and with appropriate authorization to log on the network and view what a particular camera is "seeing" and recording. Staff in a city command center can use the system's software to take control of the camera, zoom in, and if necessary, send an alert through the police communications network. In one case in Baltimore, a man was seen putting on a ski mask on a street corner. Staff immediately dispatched a car and a robbery was foiled.

Easy integration with other security systems

Sophisticated IP video management solutions go much further than just the centralization of video surveillance operations. They also integrate with other operational applications such as access control (doors, gates, etc.), geographic information systems (GIS) that enable route-finding for first responders, computer-aided dispatch systems, and even HVAC systems designed to detect biological agents, radiation, chemical leaks, or other dangerous contaminants used by terrorists. Imagine the value of video when trying to find and determine the severity of something like a chemical leak.

One might compare a video management solution to an operating system. It can be used simply to centrally operate video surveillance equipment (cameras, servers, storage), or it can extend functionality through integrations and more. Consider the value of an integration linking access control to a video camera trained on a door. This links a video record of each and every entry into a building to the data of the entry card that was used.

Open platform versus proprietary DVR/NVR solutions

Many in the security industry consider IP network cameras and IP networking the two biggest technologies changing video surveillance today, but one is even more transformative: open platform technology. The move to open platforms provides the opportunity to leave proprietary (nonstandard) DVR/NVR video surveillance solutions behind and replace them with comprehensive security solutions that add greater value and protect a city's investment.

An open platform is a software system with published external programming interfaces that enable its use – without modification to the source code – in ways beyond what the original programmers intended or imagined. Open platforms allow other companies and developers to develop products that add additional functionality and versatility to a solution such as IP video surveillance. These solutions then enable the platform to both meet more specialized needs and serve a wider variety of purposes.

Compare these open platforms to the proprietary DVR/NVR solutions popular in recent years for recording analog cameras and putting them on a network. These closed systems generally lock a city into a single manufacturer for additional applications, support and replacement parts – even hard drives. There is little choice and no price competition. What's more, proprietary DVR solutions require cities to add cameras in multiples of eight, which makes it expensive to add just a couple more cameras. The scalability of IP video eliminates these roadblocks. Equally important, the wide selection of standard PC servers, cameras and other components from hundreds of manufacturers enable cities to update selectively and avoid the extensive upgrades required when a proprietary DVR system and their cameras reach their end of life. (Note: Proprietary DVR/NVR systems are not to be confused with DVR and NVR systems designed to work with open platforms.)

The advantages of an open platform

1. **Hardware and software independence.** Open platform IP video surveillance solutions give cities the freedom of choice to use best-of-breed components from a wide range of manufacturers, not just one. This enables a city (or system integrator) to build a solution that truly meets a city's needs at a price it can afford. Selecting an open system with an extensive ecosystem opens up an enormous marketplace of choices. This includes the best products and prices to implement a video surveillance system now, as well as each time a city needs to expand it. Such choice lowers the total cost of ownership (TCO) and provides greater flexibility in meeting a city's evolving security or other surveillance needs. What's more, many products are designed to work with common IP networking products, enabling cities

to buy COTS networking products. This saves a city money on such items as servers, switches, routers, and backup power supplies.

2. **Protecting existing investment.** True open platforms, particularly those backed by a large ecosystem and strong ongoing support for external hardware and software solutions, enable cities to continuously take advantage of new advances as they become available. For video surveillance, that means a city will be able to add new cameras with advanced capabilities that cannot be anticipated today. It means a city will be able to adopt new storage solutions, video analytics software, client options, and other innovations, as they become available. It also means instead of being dependent on one company's product map, a city will be able to take advantage of an entire industry's innovation. That will allow a city to keep up with the speed of innovation no matter who drives it – a real concern right now in the IP video surveillance industry as the number of vendors and products continue to grow. With an open platform, a city will be able to continually keep its options open for the best deal, the best innovations, and the best return on investment over time.
3. **Video-enabling.** Today, a momentous shift is occurring in the physical security market. IP network cameras are being combined with other applications and systems not just for surveillance, but also to "video enable" a variety of other city operations. For example, one solution getting lots of attention for areas of known gang activity and frequent gun use is coupling a system that uses wireless and/or wired acoustic sensors and patented technology to detect weapons-fire events over large, complex environments with video surveillance cameras to record shootings. The system can identify, locate and give a visual image of the location of a gunshot event within seconds. Integrated with camera surveillance systems, such a system can direct pan/tilt/zoom (PTZ) cameras and interact with 911 and other dispatching technologies.

This is just one example in many of video enabling. Another comes from a naval base in Virginia that is home to 15,000 personnel of 27 home-ported ships. There, a system integrating video surveillance, license plate recognition, and an integrated security management system prevents traffic jams by automating entry through the facility's gated lanes. Automating entry provides major cost savings as fewer guards are needed at the gates. Consider also what can be done with badge access systems to reduce guard staff. By integrating badge entry systems with video surveillance systems that match faces with ID badges, an entry needs staff just for signing in visitors and to respond in the event of an unauthorized entry. Integrating independent security and business systems into one interactive solution like this ensures not only greater efficiency, but also results in improved functionality.

4. **Scaling and interoperability.** No-growth is a bad strategy for a city and for its IP video surveillance system. Cities need to plan for their video surveillance operation

to grow. But while IP networking makes it easy to connect IP network cameras and other IP video surveillance components, it doesn't guarantee interoperability. Nor does it mean "open platform." Used in front of a product (such as in "IP camera"), IP simply means the product will use the Internet protocol to exchange data. There is no guarantee that two products that are IP-based will "plug and play" and be instantly useful working together. Many manufacturers of video surveillance hardware (particularly DVRs and NVRs, as discussed above) encode equipment to only work with their system or software. In essence, they lock a city into their solution. Such proprietary solutions can make it difficult to scale a video surveillance system to include solutions from other vendors like access control, intrusion detection, and video analytics. Proprietary solutions can also keep cities from being able to buy the best-of-breed components at the lowest price, leaving them instead to buy from a single vendor because "that's what works." Choosing a true open platform IP video surveillance platform ensures a city the greatest amount of choice in selecting cameras and other components and the least amount of trouble in scaling their solution as it needs to expand. An open platform is expressly designed to optimize bandwidth usage and scale to handle any number of cameras, as well as to incorporate virtually all the networking components and third-party integrations a city could need.

Integrating IP and analog video surveillance systems

Even if a city is well entrenched with its existing analog video surveillance system, there's no time like now to implement an open platform IP video surveillance solution. IP isn't the wave of the future. It's the way now. Cities do not have to give up on what they have and lose the extensive investment they've made. By starting with an open platform IP video surveillance platform, cities can begin integrating their existing hardware elements, such as analog cameras (using video encoders), and nonproprietary DVRs and NVRs. In fact, adding an open platform video surveillance management solution helps a city better leverage its legacy equipment and get maximum value by enabling the centralization of surveillance operations. It also enables video surveillance operations to be more proactive by the deployment of video analytics, IP network megapixel and PTZ cameras, automatic alerts and other video surveillance innovations.

As the flexible core of a hybrid (analog and IP network) video surveillance system, open platform IP video surveillance management solutions give a city's surveillance operations all the advantages discussed in this paper. They enable a city to:

- Mix and match best-of-breed hardware and software components
- Protect existing investments
- Shop for the best values when expanding the system
- Integrate video surveillance operations with other security systems
- Take advantage of new technologies as they become available
- Keep up with the speed of innovation in video surveillance and related security systems and products

Naturally, like any major investment a city makes, it pays to do research upfront. Not all open platform IP video surveillance management solutions are as versatile, flexible or open as they claim. Solutions as cameras, encoders and IP video management systems can be integrated and sold as an end-to-end solution, but many are too general and restrict flexibility and adaptability to different use cases. Buying such a tightly bundled solution can either leave a city with a market-lagging solution that locks the city into its limitations, or a market-leading solution that ends up putting one at the mercy of a single vendor who may not feel any need to accommodate any special needs.

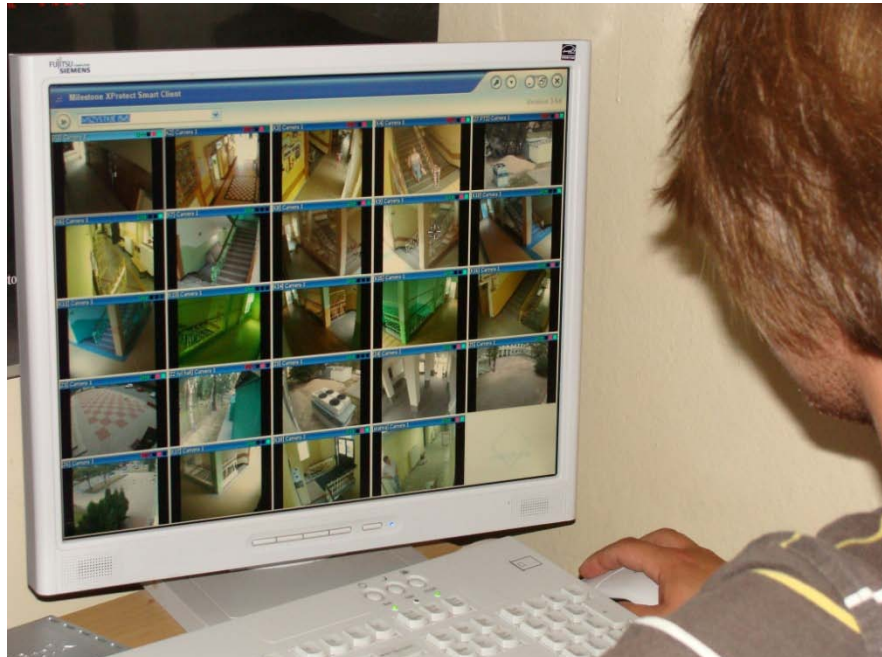
In regards to scaling, one system integrator recalls is a good example of a wireless metropolitan system installed in Italy. Using an open platform solution enabled a solution that can meet any need of the municipality because it can be freely scaled up without constraints in the quantity or type of video cameras or security systems integrated in future. Such a system offers an optimal technology-to-investment ratio and helps control fixed costs. After the initial costs of the investment, it's just a matter of utilizing the great

potential of the network and software environment to expand and leverage the network for other uses.

Improving crime prevention and prosecution

Visible cameras throughout a city send a clear message to people that they are being watched and potential evidence of their actions is being recorded. A city in Brazil installed an IP video surveillance system and noticed that just by installing the cameras, the crime percentage dropped about six percent. Similarly, a town in Poland installed a network of 300 IP cameras centrally operated and managed through an open platform. After the system was installed, the number of cases of criminal damages and theft was reduced. Equally important, the easy access to recordings enabled faster resolution of incidents. Today the city has one of the lowest crime rates per 100,000 residents of all Warsaw districts.

A Copenhagen suburb of has an IP video surveillance system that alerts staff whenever when motion is detected in key area. Personnel can then quickly determine from live and recorded views if action is required. This enables the suburb often to react before a crime, such as vandalism, occurs.



View of an interface from an open platform IP video system installation in Poland.

A Nevada police department installed IP cameras in a high crime area and within a year research showed that 52.7 percent of the residents felt there was less drug dealing in the area. Most notably, 77 percent of the residents felt the surveillance system improved their quality of life.

When crimes do happen, the high-quality recordings achieved by IP network cameras help ensure positive identification of suspects. In fact, the growing numbers of cases where criminal convictions are aided by video evidence are making criminals think twice. Clearer, sharper images make positive identification of perpetrators easier and more conclusive.

Some metropolitan areas use citizen calls as a cue for which cameras to view feeds from at any given moment. To do this, the video surveillance system is set up to run video feeds from the cameras closest to a caller's location. Real-time video is displayed on a screen

beside the emergency operator's main terminal. Video can also be recorded so that events that weren't viewed in real time can be accessed if necessary as evidence in criminal cases.

In Baltimore, a program called CitiWatch includes a state-of-the-art central control center monitoring more than 400 cameras. Many are wireless IP network cameras mounted atop streetlight poles to provide continuous surveillance in downtown tourist areas, some of the city's most violent neighborhoods, and five of the city's public housing projects. With literally thousands of arrests coming directly from video surveillance, Baltimore police estimate that violent crime is down by more than 15 percent in the areas covered by the project (Government Security, 2007)

IP video surveillance can also be a factor in improving public safety. According to Brad Goodman, the network manager for Savannah's video surveillance system, their surveillance cameras located in the city's downtown area (the largest National Historic Landmark District in the United States) "are making a big impact" in public safety, particularly during festivals and parades (Barton, Denise, Last Mile Online, 2008). Officers can monitor emerging problems or confrontations from remote locations and notify officers in the field. Using mobile Internet devices, first responders can see where to go and what to expect.

IP video surveillance on public transportation

Many municipalities have installed analog video surveillance on public transportation to monitor everything from criminal activity and inappropriate behavior to traffic accidents and the false claims that can lead to expensive liability lawsuits. These systems are typically for recording only – there's no live monitoring. This makes it difficult to use for responding to an incident in progress.

A better solution is wireless IP video technology. Not only does wireless IP video technology make it easier to install cameras on buses and trains (cameras only need a power cable), but it also enable live transmission. In cities with wireless infrastructure, this can enable the viewing of live video by a transit or police officer responding to a report of an unruly passenger or one with a weapon. By being able to actually view what's happening on the bus or train, officers can take the most appropriate action and reduce the potential for themselves or others to get hurt.

A good example of such an implementation comes from the Massachusetts Bay Transportation Authority (MBTA), the fifth busiest transit system in the United States. MBTA has equipped its buses with wireless video technology that's capable of sending video to nearby police cars. This enables a police car that comes within range of the wireless technology to form a network with the bus and access individual cameras to see what is going on.

The London Overground Rail Operations Ltd. (LOROL) is implementing a system with 1,500 IP network cameras that spans 40 train stations. One authority cited the "quality, robustness and reliability of the technology" as a reason, as well as the ability to integrate seamlessly with other technologies on the network. IP video surveillance is also being installed on 190 new trains for London Underground's sub-surface lines.

Conclusion

Crime and many other threats to public safety and infrastructure may be a constant in the world's urban areas, but open platform IP video technology is dramatically increasing the capabilities and value of video surveillance in helping combat these threats and make people feel safer. Cities looking to install or expand their use of video surveillance should look beyond traditional analog systems and explore the many cost advantages of open platform IP video technology. These advantages include everything the ability to contain costs through freedom of choice in hardware and software components to the avoidance of equipment obsolescence through the future proofing that comes from choosing an open platform with a well-established ecosystem.

One only has to look at a city in Italy to discover firsthand the total cost of ownership benefits of moving from a proprietary analog system to an open platform IP video solution. The previous surveillance system consisted of analog video cameras monitoring a few sensitive areas. That system, however, soon proved insufficient to meet the city's needs, had all the limitations of a one-vendor solution, and used expensive commercial content delivery network (CDN) data lines. The annual cost of leasing the telecommunication lines from the national carrier was excessive for the poor results. What's more, each desired upgrade ran against budget restrictions, making it impossible for the city to get new tools for improving its surveillance. In making the switch to an open platform IP video surveillance solution, the city installed two fully redundant and independent wireless communication centers and bought state-of-the-art dome cameras complete with automatic motion tracking and powerful 35x zoom with day and night modes. The system is paying off quickly. In just four years, the savings from no longer having to pay the subscription fees for the CDN lines will amount to about EUR 48,000. What's more, the city now has a far superior system that provides much higher image quality.

In this white paper, we've only been able to give a small picture of what's possible with open platform IP video surveillance. The years ahead are sure to bring even more dramatic cost advantages, performance improvements and new capabilities to be gained from everything from new IP network camera features and improved video analytics software. One of the biggest advantages from the administration point of view will come from continuing to centralize the management and control of security systems. It's very likely that the cities in the future will have thousands, even millions of wired and wireless IP network cameras integrated with access control and other security systems all centrally managed and controlled through an open platform, but shared across an IP network by a variety of public agencies. In responding to the emergencies of tomorrow, such a system will enable faster, more informed decisions and better coordinated responses that can save the lives of citizens and emergency response personnel alike.

Case Study: An integrated security solution for a multi-year city surveillance project

The Challenge

The Incheon Free Economic Zone (IFEZ) in Incheon, South Korea, consists of the three regions of Songdo, Cheonna, and the island of Yeongjong – an area of more than 51,000 acres. IFEZ is transforming these three regions into a self-contained living and business district featuring air and sea transportation, a logistics complex, an international business center, financial services, residences, schools and hospitals, and shopping and entertainment centers. Approximately 500,000 people will live and work in the area when it's completed. City development projects are being staged across 11 districts in multiple implementation phases with completion deadlines stretching into 2020. The challenge for the security side of the project is to prove the feasibility of an integrated, scalable security solution that can be implemented in phases. The goal is to start in small-scale steps and use lessons learned in subsequent scale-outs across districts.

The Solution

IBM Security Services designed and architected a system around Milestone XProtect Enterprise as the video management software and the IBM Video Correlation and Analysis Suite for analytics. A variety of analog cameras with encoders, IP network cameras, and Intelligent Traffic System cameras were selected. Infrastructure installation was performed with a local partner. Both the IBM Video Correlation and Analysis Suite and a license plate recognition system were integrated using XProtect Enterprise. The interface includes a map, plus live and recorded views from connected cameras. Events generate real-time alerts and the automatic display from cameras in the immediate area. Searches can be performed across any subset of cameras across any time frame, along with other search parameters. Analytics identify suspicious behaviors such as loitering, fast movement, and speeding cars. License plate numbers are continuously captured for later identification in cases of a theft or other crime.

The Advantages

The IBM solution based on Milestone XProtect Enterprise software provides a future-proof open system solution architecture for the IFEZ U-City Business Division. It enables easy integration of IBM video analytics and other solutions. The ability to customize, localize, scale and extend the solution has proven the flexibility, comprehensiveness of the solution, and its appropriateness for city surveillance to the IFEZ. The system has also

demonstrated the sustained return on investment (ROI) possible through video analytics that eliminate the need for security personnel to be involved in minute-by-minute video monitoring and offering the potential for video-enabling various operations (such as access security) in the future.

Main screen from IBM Smart Vision Suite (previously named "Smart Surveillance Solution). A search screen can be easily accessed through this interface that enables searches through hundreds of millions of events in seconds.



KEY:

- **Map and live/recorded player**
- **Real-time alerts**
- **Selected cams**



The Open Platform Company

About Milestone Systems

Founded in 1998, Milestone Systems is the global industry leader in true open platform IP video management software. The XProtect™ platform delivers powerful surveillance that is easy to manage, reliable and proven in thousands of customer installations around the world. With support for the widest choice in network hardware and integration with other systems, XProtect provides best-of-breed solutions to 'video enable' organizations – reducing costs, optimizing processes, protecting people and assets. Milestone software is sold through authorized and certified partners. For more information please visit www.milestonesys.com

[Milestone Systems Headquarters, DK](#)

Tel: +45 88 300 300

[Milestone Systems US](#)

Tel: +1 503 350 1100