

Mile Eye Club

Home to more than 450 international banks and countless multi-national corporations' headquarters, London's Square Mile is a major business and commercial district ranking alongside New York's Wall Street as the leading center of global finance. As such, The City invokes a unique mix of security issues that provide a constant challenge for its appointed guardians – The City of London Police (COLP). Brian Sims talks to COLP Superintendent Andrew Mellor about the latest security measures instigated to combat crime and terrorism in The City.

The City of London Police's (COLP) remit is to police the Capital's streets using effective intelligence. Not for nothing is it widely recognized as the UK's leading police force, employing as it does a broad depth of leading-edge investigation techniques.



Playing host to more American banking organizations than the whole of New York, and more Japanese banks than in Tokyo, The Square Mile presents something of a unique environment to secure, with – as one might expect – quite exceptional threats posed to its day-to-day business activities.

With the focus of the early 1990s IRA terror campaigns aimed at causing as much damage to infrastructure as possible (the cost of repairing the devastation caused by the Bishopsgate attack was more than £1 billion), big businesses were being forced to consider the option of relocating elsewhere – in turn creating significant pressure for effective counteraction to the prevailing climate from the authorities. An initial CCTV surveillance system was already in place, consisting of a number of PTZ cameras. The main task of this basic early system was to monitor traffic flow.

At the time of its inception, the concept of CCTV as a tool to combat terrorism and general crime was not greatly developed. Following the IRA bombings, though, the focus of the system was changed and developed over a number of years. Staged expansions saw the number of cameras deployed to over 100, taking in surveillance of all areas of The City (including the banks of the River Thames).

Why deploy surveillance?

Superintendent Andrew Mellor of the COLP explains the initial decision to use CCTV. "The system worked to combat the terrorist threat, especially in the 1990s when the danger from the IRA was at its highest," he urges. "Terrorists don't just turn up and commit their attacks. These operations are preceded by months of planning and reconnaissance. A key to preventing such premeditated attacks is the detection and disruption of this reconnaissance activity."

Mellor continues: "CCTV can instantly provide visual coverage of an area. Police constables on every street corner, on the other hand, are an expensive way to secure an area the size of The City. It's not an efficient deployment of our resources. CCTV is a highly effective alternative, and can provide the eyes for a police force. Although the expanded CCTV system has been developed as an anti-terrorist weapon, it has had a consequent and beneficial impact on general crime levels within the Square Mile."

At the time the CCTV system was expanded, armed robberies were a weekly occurrence in The City. The moment the system was installed and marketed, these instances stopped. One could only surmise that the thinking criminal thought the odds of being caught in The City were now too great!

Today, the surveillance system continues to be concentrated around The City's entry and exit points and forms the famous 'Ring of Steel' encircling the Capital's financial heartland. Comprising CCTV 'checkpoints' at each and every vehicular entry and exit gateway, the system boasts the largest concentration of Automatic Number Plate Recognition (ANPR) cameras in the UK.

"The ANPR-enhanced cameras collect registration number information as well as identifying any front seat passengers in a particular vehicle," confirms Mellor. "All ANPR points are also equipped with a dedicated PTZ camera to further investigate an issue, or to follow a target vehicle into or out of The City. This holistic approach stems directly from the COLP's intention to maximize any and all resources, and use the best technology to provide the most effective evidence."

Simple and Effective Control

Reinforcing this intention, when the time came to upgrade the control system for the ever-expanding installation, the COLP embarked on an exhaustive test program to select the best solution. Superintendent Mellor describes the process: "We tested a wide variety of systems from a number of different manufacturers. As the trials progressed, it became clear that our multi-faceted system was going to be best served by a specific control solution."

The highly-developed but simple operation of Synectics' SynergyPro system has already produced multiple benefits for COLP post-procurement and commissioning. "The straightforward control and retrieval of data has led to the required amount of operator training time being reduced, so too the associated costs," comments Mellor.

"It has also allowed us to easily train a greater number of our officers to use the system without the usual associated amount of financial investment. From PCs on the beat through to myself as Superintendent, we now have over 300 members of the COLP team trained to use the system."

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In addition to the main Control Room, SynergyPro™ positions are deployed around police stations City-wide. This allows officers instant access to evidential video of an incident they themselves may have been involved in. "Effective CCTV monitoring of our streets not only protects the public but can also protect our officers," continues Superintendent Mellor. "Our arresting officers can be confident in their actions, knowing that each incident is captured in high-resolution encrypted digital video, downloadable for evidence if necessary. This can avoid potentially costly false allegations being brought against COLP patrolling officers. If false allegations are made, they are soon dropped when evidential video of an arrest is revealed."

Superintendent Mellor affirms: "One thing I have learned in my experience with CCTV control systems is that, like any other electronic product, they are only as good as their user interface. A surveillance solution can boast thousands of features, but if the user cannot access them easily and intuitively then they will not be used. Intuitive control should extend to the use of CCTV imagery in Court, allowing simple demonstrations of evidence to juries and affording them an understanding of how the video evidence was gathered, leading to a more effective prosecution." With a total of five SynergyPro workstations deployed in the COLP Control Room, operators can access and control all the installation's 100-plus cameras. Superintendent Mellor elaborates: "Due to the nature of a staggered expansion

of the legacy system, the COLP installation consisted of cameras from several manufacturers. When specifying a control system, we selected the SynergyPro solution in the knowledge that it would communicate effectively with our mix of legacy cameras.”



COLP Control Room Management

The shift system in the COLP Control Room works with five groups of officers rotating around a five-week system. The group of operators always contains an inspector and a sergeant accompanying the Control Room staff, with any leave being absorbed into the five-week system. Each shift change in the Control Room mirrors that of the patrolling group, allowing each operator shift to become familiar with their own patrolling groups and vice versa.

The COLP's control facility also boasts a 'Special Operations' room. Equipped with a further four control positions, the room is used during incidents such as large demonstrations, on ceremonial occasions (like The Lord Mayor's Show) or for any event in The City

that requires a larger number of patrol officers (and thus more system operators to support them).

Experienced COLP operators can be confident of effective surveillance at such events, and the successful tracking of any incident that may arise. Using Synergy's 'Incident' (in progress) feature, operators can – during the course of tracking 'live' events on-screen – create a fully-documented audit trail of any incident. The 'Incident' feature also locks-out other operators from using a specific 'live' camera in use during the crucial incident tracking period. The date – along with the start and finish time for each event – is stored automatically within the evidential video created, and tagged with a full audit trail of information (all of which is indexed to the operator's initials).

Prioritized 'Supervisor' access permits the post-tracking of a particular event to determine which cameras were used to view an incident, how and when they were moved, the sequence of camera switching and which Control Room operator was controlling them at that time – a powerful document feature should the need arise for prosecution evidence yielded from the tracked incident.

Recording all of the system's 140 cameras, 24 hours per day required a powerful solution, one that was met with the deployment of Synectics' Modular Digital Recording System (MDRS) review client technology. This provides instant access to the valuable camera images, as well as easily downloadable evidence to other media for presentation in a Court of Law.

The MDRS incorporates patented time-lapse later recording technology. This allows COLP to capitalize on the benefits of real-time recordings made at the start of the recording process, thus enabling operators to choose recording strategies that match the risk profiles of individual cameras based on events or time, rather than compromising on a fixed time-lapse only strategy.

With time-lapse later in operation, the automatic intelligent redistribution of the digital storage capacity available allows the benefit of any – or all – COLP cameras to be recorded in real-time. Highly detailed, broadcast quality images may be captured at the very start of the recording process (ie when it's liable to contain the most 'evidential value'). Only later – after a 96-hour period, in fact – is time-lapsing introduced to reduce the frame rate of the stored digital video evidence down to eight frames per second for the remaining 27 days.

Image Processing and Retention

Crucially for the COLP, unlike with standard digital recording systems, the time-lapse later recordings employ very high pixel count images, measured in Common Interchange Format (CIF). Typically 4CIF, these recordings are four times more detailed (by pixel count) than those commonly offered, permitting more detailed recognition and incident content – a crucial factor in the presentation of key evidential information.

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The 100-plus cameras comprising the COLP installation create a huge amount of visual information to process and retain. To address this situation, the COLP Control Room use the 'Evidence Locker' management feature. A robust server configured to handle and store video evidence, the Evidence Locker provides a useful resource, acting as a central point for evidence management.

Providing a full managerial audit trail, all usage is logged onto a database. For future authentication purposes, a unique 128-bit MD5 hashing encryption code is created with every minute of video footage. If a copy of footage is required to be taken off-site or downloaded by a COLP investigating officer, the system saves the video clip and evidence's hashing code – logged and detailed in the form of a Digital Evidence Certificate – to prove its legitimacy.

"Using Synectics storage for all our evidential video means the data from the system's cameras is extremely safe," explains Superintendent Mellor. "Using all the Synectics/IBM storage nodes, the data is spread throughout the system meaning that, in the unlikely event of a node failure, all data of a particular camera feed isn't lost." Commenting on the effectiveness of the surveillance technology, Superintendent Mellor enthuses: "First, it provides a constant street presence, and in the hands of our experienced operators effectively affords The City a 'virtual policeman' on every corner. Second, it greatly simplifies retrospective investigations, allowing investigating officers instant access to crystal clear images of an incident without the need to trawl through hours of videotape. This greatly compresses investigation times and saves public money by forcing criminals off the streets more quickly, limiting the amount of further crimes they can commit."

The Fight Against Terrorism

In the aftermath of 7/7, Superintendent Mellor and his team amassed over 24 hours of potentially key video footage from each camera on the COLP system. "It was a full review scenario for our system," asserts Mellor. "We were investigating a complete day of footage from every camera. The technical capability of our system was underlined when we were able to efficiently trace all vehicular movements of those involved in the incident."

The COLP's skilled operator team communicate directly to patrolling officers via the state-of-the-art Airwave/Tetra system. This system allows seamless, interference-free communication between the Control Room and the patrolling officers, and from officer-to-officer. The system also permits instant communication from outside the COLP district should an incident leave the Square Mile.

Superintendent Mellor sees his force's commitment to effective CCTV surveillance going beyond the instigation and maintenance of their own system to encompass private based systems as well. "We have dedicated officers who can act as security consultants to local businesses, checking the efficiency of their systems, ensuring they are eliciting the correct and most economical scene coverage and helping with advice on economical upgrades, proper maintenance and camera placement if and when necessary. This is to ensure maximum coverage for The City of London as a whole in an effort to ensure Best Practice within all surveillance systems in the City."

Mellor adds: "In London, and across the UK as a whole, effective CCTV surveillance is being accepted as part of everyday life. This is a by-product of the different way in which our police forces are viewed in comparison with those of other European countries. In the UK, the traditional perception of policing is usually one of citizen policing citizen. This perception extends into the area of public surveillance. However, this perception is much different in other European countries, where the police force is seen as a State-controlled body, and the associated surveillance systems as the State monitoring its citizens."

Prevention of Major Thefts

COLP CCTV operators deal with a variety of incidents on a daily basis. Since the introduction of the MDRS system, numerous road traffic accidents have been resolved with the aid of high-resolution footage of the incidents. "The parties involved often describe a vastly different series of events," explains Superintendent Mellor: "The subsequent Court proceedings of most cases are quickly resolved on production of the high-quality MPEG4 encrypted evidence we generate from the MDRS system."

Major thefts have also been prevented. Such an instance involved an armed raid on commercial premises where a gang made off in a stolen taxi with £30,000 in cash. Witnesses at the scene passed the taxi's number plate information to COLP officers. Using the CCTV system to its full advantage, operators were able to track the vehicle's progress through The City while directing traffic units who quickly located and stopped the vehicle. The gang was subsequently arrested, and the money and weapons they were carrying were duly recovered."

Assisted by the powerful surveillance technology, the COLP surveillance team often employ techniques and professional intuition to spot suspicious situations. Superintendent Mellor cites an example. "One of our operators identified a van making a U-turn in the road, obviously to avoid driving past one of the ANPR camera units. Working closely with the Control Room staff, patrolling units stopped the van and discovered a large amount of controlled substances for distribution. The driver was also found to be a prisoner on day release." With The City's system already capable of handling over 250 cameras, its ability to expand still further will be the cornerstone of a highly effective security strategy within the Square Mile prior to (and during) 2012.

About Synectic Systems, Inc.

Synectic Systems Inc. (Synectics), a wholly owned subsidiary of UK-based Quadnetics Group Plc, is an engineering, integration and manufacturing company with expertise in IT and networked systems, CCTV control systems, enterprise storage and command control software applications. Quadnetics is listed on the Alternative Investment Market (AIM) of the London Stock Exchange.

Synectics' unparalleled ability to deploy custom, enterprise-class DVR solutions that integrate with existing legacy systems and future technologies has established them as a market leader in the Middle East, the UK, Europe and in North America. For more information about Synectics, go to: www.synecticsusa.com