

Fly on the wall



Getty Images/1193236

The UK's dependence on CCTV is under threat from spiralling monitoring costs. Gary Mason reports on a possible solution in the development of intelligent camera systems

The UK is often referred to as a surveillance society because as a nation we have installed a network of 4.2 million CCTV cameras, according to the Information Commissioner. While a debate continues about the perceived danger to civil liberties that these cameras pose, the technology continues to provide the police with visual recorded evidence of serious crimes.

The abduction and murder of Merseyside toddler Jamie Bulger from a Liverpool shopping centre in 1993, which was captured on a public space CCTV camera, demonstrated to the public for the first time the technology's evidential value. Significantly, it also helped trigger a raft of Government funding for council-operated camera networks.

There are now more than 300 town and city centre CCTV schemes operated by local councils in the UK, most of which have direct links to local police forces. But while the spread of CCTV has grown exponentially on the back of Government, council and police support, some believe the technology has now reached a crossroads in its useful development.

Financial headache

A report last year by the CCTV User Group warned that many of the systems installed with Government funding during the 1990s are becoming obsolete and that without significant investment, they will provide little in the way of detection and prevention of crime.

Peter Fry, the group's director, says: 'Local authorities and police forces invested significant capital resources in the mid '90s. Since then, they have further invested council tax revenue, with little contributory funding from others and certainly no contribution from central Government in managing, operating, extending and maintaining the systems.'

'While capital investment has been made in the extension of systems, and the Home Office has funded upgrades and developments, in some cases the original base equipment has remained un-

changed. This is evident in many control rooms.'

He adds: 'To ensure CCTV systems continue to be as effective as they have been to date – as demonstrated in the evidence provided during the London bombings – we believe it is essential that further investment is given by the Home Office.'

For local authorities, the financial hangover caused by the rapid growth of CCTV is not just derived from the costs of equipment installation and maintenance.

The essential human element that makes the technology work – the operators in the control rooms who monitor the screens – is a major drain

'The survey estimated that nationally there are 2,500 operators employed to work on town and city centre systems'

on resources. Meanwhile, statistics show that control room workloads are rapidly increasing.

A survey conducted by the CCTV Users Group in spring last year showed that, in the past 10 years, the average control room has more than tripled in terms of the number of cameras it monitors. The survey showed that the average control room is now monitoring 107 cameras, of which 85 are their own public system cameras. In a 2004 survey by CCTV system suppliers, including Viseum, it was estimated that an operator can only give proper attention to two or three cameras at any one time but in practice, they often watch 40 or more. According to a CCTV User Group survey last spring, the cost of monitoring works out at approximately £2,000 per camera.

The survey also showed that less than 27 per cent of all CCTV systems receive substantial funding or personnel from their local police force to assist with the monitoring process.

Fifty-five per cent of systems are monitored by in-house staff and 33 per cent use contracted operators, with 10 per cent comprising police personnel. Approximately half the systems have a maximum of two operators on duty at any time and two-thirds have a minimum of one person at non-peak times.

Taking into account shift work, holidays and sickness, the survey estimated that nationally there are 2,500 operators employed to work on town and city centre systems. Many cash-strapped councils are looking to reduce these manpower costs. The use of 'intelligent' camera systems which require little or no monitoring from the control room because they 'detect' suspicious behaviour, are being tested by a number of local authorities.

Artificial intelligence

Luton Borough Council is one such authority. The council's CCTV scheme is monitored 24 hours a day, 365 days a year by a contracted private company based in the CCTV control centre in the Town Hall. All CCTV master videotapes are kept for 28 days before they are erased and re-used, unless the tapes are requested and seized by police to be used as evidence. The tapes are reused a maximum of 12 times before they are disposed of safely.

There are 134 CCTV cameras in total, which are monitored by teams of 12 operators. If an incident is detected, the operators can transmit the images to police controllers at Bedfordshire Police's Kempston headquarters. The CCTV centre staff talk to police via a dedicated telephone line and there is also a police-supplied Airwave radio terminal for monitoring incidents.

The CCTV cameras can make three types of recordings. Multiplex recording allows up to nine cameras to be recorded on to a single Super VHS videotape at a quality of 1.5 frames per second. The 12-hour recording is at approximately eight frames per second and real time recording is at 25 frames per second.

Despite the success of Luton's CCTV scheme, the council has been looking to drive down op-

erating costs while maintaining the system's effectiveness. To do this, it has recently completed an installation in the Hockwell Ring area of Luton using an 'intelligent' CCTV surveillance camera. The camera system, supplied by Viseum, watches everything, but only takes notice when something unusual happens.

The system knows where all objects are in its field of view, what the objects are, where they have been and then intelligently predicts what they are about to do. With this information the system decides what to do and acts under disciplined instructions from pre-programmed surveillance parameters. The system then homes in on a particular incident, the motion of that incident then controls the pan/tilt/zoom camera, providing fully automated, close-up surveillance.

For the trial, the camera was installed on the Hockwell Ring estate, a collection of densely populated tower blocks and council houses which have been affected by burglary and vandalism.

Quadrant Video Systems Plc, which has been responsible for installing and maintaining cameras on behalf of the council for a number of years, installed the new system. The camera unit was installed high up on a vandal-proof pole. It is constantly moving and potential offenders do not know if they are being monitored live. The council says it has acted as a real deterrent to would-be troublemakers.

The images are digitally recorded on site but can be remotely retrieved by the control centre over an internet protocol link at any time. Gary Crucefix, of Luton Borough Council's capital and asset management department, has been instrumental in the assessment of the Viseum unit throughout its trial.

He says: 'Unlike a human operator, the camera can watch more than one event at a time without suffering from information overload or loss of concentration. A particular benefit of the images obtained by the cameras is the fact that each event is captured in two simultaneous camera images, which are time-linked, watermarked and tamper-proof. High-quality information of this type is essential for successful prosecutions.

'Effective and intuitive, the pre-set profiles remove the need for any complicated set-up procedures, while allowing us easy customisation if necessary.' The cameras' 'profiles' menu allows the operators to change profiles automatically, allowing the system to look for different parameter triggers at different times.

So, in terms of saving money and still managing to record high-quality visual evidence for the police service, it seems sensible to make sure our fly on the wall is more intelligent than most. ■

Gary Mason is a freelance writer and editor of Police Product Review

www.policereview.com

Web subscribers can read related articles, including:

All systems go (PR, 18 April 2007)

Surveillance - the view from above (PR, 11 April 2007)



'Unlike a human operator, the camera can watch more than one event at a time without suffering from information overload'

CAUGHT ON FILM

Luton Council's CCTV scheme has received police and judicial commendations on a number of occasions including its work during a murder inquiry in 2001.

On 21 March 2001, an 18-year-old man, Marcus Hall, was murdered by six people after an outbreak of violent disorder in Luton town centre. The cause of death was a combination of stab wounds to the abdomen and serious head injuries.

The public disorder leading up to the murder was captured on town centre CCTV and also from a private video operated by a media student who was present at the scene. The quality of the municipal video was not particularly good.

A five-month trial took place at the Old Bailey in 2002, culminating in the conviction of all six defendants for murder and violent disorder.

The unique feature of the case was the use the prosecution made of DVD technology in presenting it. This work has been highlighted by the Bedfordshire district of the Crown Prosecution Service.

In total, the video evidence amounted to 17 tapes and exceeded 250 hours of viewing material.

'To make practical sense of this footage the prosecution found it necessary to streamline it into more jury-friendly form,' the CPS said.

'When presenting the evidence at trial, the prosecution was able to avoid the time-

consuming task of forwarding and rewinding tapes in an effort to isolate shots of importance.

'By using the DVD technology, the prosecution could highlight individual defendants which made their actions and conduct readily noticeable to the jury.

'The procedure was repeated for each of the six defendants shown in the footage. The 24 tracks on each DVD could be programmed to show certain actions of individual defendants at the click of a mouse.

'Enhancing the DVD showed good facial identities without any 'graining' of the image. Whereas initially the defendants denied presence at the scene, once this footage was shown, all of them accepted being there.'

His Honour Judge Barker commented favourably on the use of technology in the case and Lisa Ward, the caseworker, liaised with Bedfordshire Police and the technical company engaged by Network Forensics, a department of Control Risks, to present the case in this technical format.

Michael Mulkerrins, the prosecuting lawyer, said the case presented a precedent for all future large-scale public disorders where video footage is available, enabling the prosecution to convert otherwise lengthy, and often poor-quality, footage into images which are easily understood by the jury.