CCTV intelligence beats antisocial behaviour

To help local authorities achieve their goals, leading up to the start of the new millennium Viseum (UK) undertook a nationwide study to identify the problems associated with CCTV surveillance. This was supported by the UK DTI, who offered the maximum UK DTI SMART Award to develop the solution to the problems identified.

Problems identified

Consider when a moving camera's historical video is reviewed to find evidence of an incident that was not reported until after it happened. The typical result after searching through hours of video is to find no evidence at all, because the camera wasn't pointing in the right direction. Studies have shown that with the small number of operators to the ever increasing number of moving cameras, operators can only monitor and move 20% of their network of cameras effectively at any one time. Monitoring efforts therefore must be focused on those areas that are known to produce most crime. This means that operator resource cannot be spared to effectively monitor the many cameras covering areas where unpredictable crime happens.

Most moving cameras are therefore either left stationary, looking at nothing, or left on preset tours, which allows them to look at different places but still record nothing in particular. Potential wrong-doers often assume that these are dummies, or are just not being watched. This has significantly reduced the original deterrent effect that CCTV networks had when they were newly installed, and ultimately means that in wider areas random and unpredictable crimes will still go unnoticed and remain a threat.

At present the areas protected by local authorities' CCTV are in and around town centres. However there are many other populated areas within a local authority which do not fall within "Town Centre" CCTV coverage. There is evidence that CCTV moves a proportion of crime and youth disorder out to these areas, which become a casualty of those few premium areas that are fortunate enough to have protection. This has aggravated the problem of random crime in the wider areas. It is apparent that crimes in these areas can be no less serious than those committed where CCTV is in operation.

One attempt to protect more areas whilst meeting budgetary constraints has been to use CCTV systems which can be re-deployed to different places. However, in practice these re-deployable systems have shortcomings which discourage users from actually re-deploying them. In particular they need to be manually operated and as a result need mobile remote communications which can be more costly to set up and use. If crime does move on, users often leave these systems at their original installation but no longer even try to allot time to monitor them. Alternatively they may take them down and store them. Either way, all the benefits which these re-deployable systems offer are lost.

Solution developed

To discourage the break-out of youth disorder and anti-social behaviour hot-spots, a long term crime deterrent is necessary. This requires two main elements – to achieve and publicise consistent crime clear-up, and to ensure that moving cameras can be seen to be

In today's climate of heightened security, there is a great need to increase the effectiveness of CCTV. The increasing costs of clearing up more crimes and anti-social behaviour, and the considerable ongoing operational expense of CCTV surveillance, make this a difficult task. The high costs of staffing, monitoring and communication infrastructures, means that more than ever before local authorities need "more bang per buck" in their initiatives to tackle these issues.

constantly reacting to events. This and the problems identified during the nationwide survey led to a software solution providing intelligently automated moving camera surveillance - described here as "Intelligent Moving Cameras" (IMC). To improve operations and save money the solution had to:

- Detect incidents and react by moving the camera accurately day and night through all weathers
- Consistently capture close-up evidence on its own
- Be easy to install, use and rapidly re-deploy

Teams of developers around the world have attempted to produce effective IMC technology, but in every case, after several years of development have failed to overcome the many technical obstacles. In fact, prior to supporting this development the UK DTI initially declared it would be impossible.

Many fixed video content analysis technologies are available, but at best these only alert the already very busy operator to particular complex niche scenarios. These should not be confused with true IMC systems that provide the active functionalities that end users need and can be relied upon to collect close-up evidence.

The acid test

Once development of the Viseum IMC solution was complete it was time to test it live, in the field. Various product models incorporating this ⟶

Stuart Thompson, inventor and designer of the patented Viseum System and MD of Viseum (UK)

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software were placed under rigorous trialling with a number of local authorities. Areas which suffered most from random crime were chosen and a like for like comparison was undertaken between the IMC and the existing costly operator monitored infrastructure. The results were outstanding. Every crime reported had been captured by the IMC and its close-up evidence was used on all occasions, but nothing had been captured by the operator monitored infrastructure. In one particular installation the IMC even captured evidence of a crime that had not been reported. In another installation it caught evidence of several unreported misdemeanours which the council acted upon and intelligence was provided to the police on a potential drug dealer. This sent out strong deterrent messages and eventually that authority even relied on it as a management tool to ensure staff were maintaining certain areas properly. Throughout all IMC trials the deterrent effect was highly noticeable and proven by the drop in crime statistics.

In the past some law abiding individuals have been concerned by the possibility that they might be watched by others. However, in practice, where IMC technology has been used to protect communities suffering from crime, the noticeable reduction in crime and anti-social behaviour has led members of the public to comment that the criminals cannot avoid being watched but people going about their daily business have nothing to hide.

Once people have understood the way in which evidence is used, they realise that if they have not done anything wrong, they will probably never actually be watched by anyone any way.

The trials proved that there are many situations where it is no longer necessary for operators to constantly monitor the camera and control it in order to catch crimes. If time and budget permits, operators can take control of the IMC seamlessly whenever they wish, but when it is left unattended it will continue to monitor the area effectively and catch crime. The trials also showed many additional benefits of IMC technology, some of which are:

- It provides long range line of sight surveillance and recognizes events too far away for the naked eye to see
- It can closely watch multiple events in different directions at the same time
- It provides extended evidence with overview and close-up recordings
- It functions using hardware already in wide general use
- It can if required raise an alert on specific activity

Application

To get the maximum benefit from past investments in manned surveillance CCTV, there is a strong case for integrating IMC technology with CCTV control rooms. By improving staff-operated PTZ cameras, organisations can then effectively and consistently monitor a far greater percentage of their moving cameras.

The budgetary argument for purchasing a single all-in-

one unit which can be rapidly deployed to combat new crime and youth disorder hot-spots, and then be re-deployed to follow them whenever and wherever they appear, is also extremely compelling. With re-deployable CCTV units using IMC technology for post-crime video retrieval there is no need to use remote communications at all. And the communications needed to respond to IMC alerts are much less expensive than constant monitoring. IMC re-deployable systems are significantly easier to manage, making re-deployment rapid and cost effective, and much more readily used as intended.

Moving ahead

Generally speaking, in all sectors of industry where technology is embraced it saves money and improves operations. Despite this it is generally recognized that the security industry is one of the last to embrace new technology. With new technology there is always the barrier to overcome of fear of loosing jobs. However it is well-known that statistically the UK's monitoring infrastructure does not have enough operators available for the number of cameras installed. The industry's consultants are quickly coming to recognize the need to invest in proven technology to achieve improvements and savings, and to provide cheaper and more effective tenders to protect more areas

The IMC technology will constantly and automatically monitor any given area day and night, to capture evidence of what it has been instructed to look for. It can also be told to look for different things at different times of the day or week. Camera sites can either be completely left alone to manage themselves or used proactively at certain times dependant on the operators' local knowledge. Once operators and management realize these capabilities, a new understanding of the "man and machine" relationship is forged. Just as in any other industry "Man controlling thinking machine" is the new relationship, and it works to enable staff to monitor all areas at the same time effectively, making it easier for them to capture evidence and harder for criminals to get away.

The use of IMC technology will be the driving force for a new generation high profile deterrent for all CCTV. Companies are now joining forces with Viseum to completely change the popular perception of CCTV surveillance. This change of perception will bridge the gap between outdated security methods and enhanced technologies.

The key message is that the appropriate use of IMC technology frees up operators and gives them more time to provide more effective surveillance. Clear signage such as "Warning - this area is under IMC supported CCTV surveillance" will make intending wrong-doers unsure whether an operator or the intelligence is watching them - either way they will be worried they will still get caught.

Future steps

Stuart Thompson, inventor and designer of the patented Viseum System and MD of Viseum (UK) commented, "We developed our software to help the areas affected by sporadic crime that fall outside traditional Town Centre CCTV coverage. I have wanted to make this market announcement for many years now but we have first taken great care to prove the system well in terms of concept and ability."