Setting high standards

Next time you're walking down the street, look up at a CCTV cameras and see if you can spot any wires coming from the camera. The chances are you won't. Over the past year the CCTV sector has been steadily transferring to IP wireless CCTV systems from traditional analogue systems. This has led to an increase in analytics software being used with CCTV systems and also prompted calls for the standardisation of IP CCTV technology.

Camera over Swindon rooftops, by 802 Global.To tap into a wireless IP CCTV signal would require an antenna in the line of sight.

Wireless IP CCTV works by assigning a camera an IP address and sending the live images back to the control room via a wireless signal. This signal can be received anywhere at any time by numerous devices, including enabled mobile phones, and by any one with access to that IP address. The mobility of the system is a far cry from the static and inflexible analogue systems. However, without the visual security of thick black cables synonymous with the latter, and with internet hackers and computer viruses a common feature in the news, the security of the system is one of the first concerns many people have about the technology, along with the fear of the signal failing.

These are unnecessary worries, according to Tim Close, sales and marketing director at IP CCTV solutions firm 802 Global. "I have never seen a signal fail, and we have more than 10,000 cameras operating faultlessly in the UK, so this is not an issue. In terms of security, we are operating at frequencies that aren't your standard wifi frequencies, and our devices are invisible to much of the hacking software. We are also using directional antennas that are far above head height level. Also, to tap into the wireless systems we are deploying, you would need the same proprietary radio that we use, you would need all the passwords or a scrambler to decode the passwords (which would require a lot of computing power) and you would have to have an antenna in line of sight, so you would need to be on something like a cherry picker. So to tap into the wireless you would be making yourself very conspicuous."

There is also a false impression that the technology is a new one. In fact, it has been around for a few years now. Bippon Kalia, Chief Technical Officer at BiKal IP CCTV, said it has only really been picked up in the past year because it has suddenly become comparable in price to analogue. "The cost of IP has come down considerably to the point where it is comparable with analogue systems and the technology has also come of age. We have been distributing a plug-and-play solution that requires no technical knowledge to set up. So this makes IP solutions more accessible. Customers are also seeing that analogue systems and IP systems are comparable in price, but that they can achieve more with the IP systems.

IP surveillance systems are generally easier to install and can also be cheaper for larger installations. Network based CCTV systems also offer more efficient communications allowing better remote access and compatibility. So not only can you transmit to a PC (which you can also do with analogue), but you can also transmit video to mobile phones and other multi-platform devices. IP CCTV has also allowed video cameras to exceed the specifications of analogue cameras with HD or MegaPixel cameras now on the market providing crystal clear image quality never seen before from CCTV systems."

All this has facilitated a growth in video analytics software. Where it was possible for software analytics to work with analogue systems, IP's improved communication channels and capability for higher definition pictures has allowed software developers to create an increasing array

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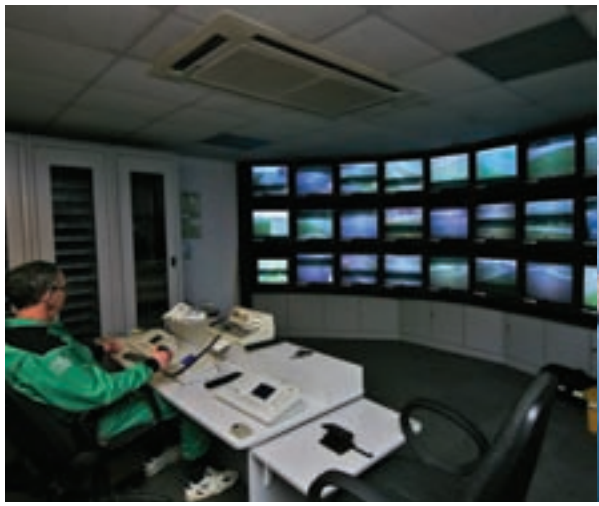

of systems to manage images coming from CCTV cameras into control rooms.

ntl:Telewest Business' Andrew Gibson explains: "Analytical software has and will have a significant impact on the way CCTV is used. Firstly, the software can act as a filter and carry out a defined response for the operator, making them more effective in their role by alerting them to specific activities, behaviours, rule breaches etc that need human intervention. Secondly, there are in excess of 4m cameras in the UK, so not all footage is monitored. So, not only is the filtering as previously mentioned of growing importance, but the use of the software to rapidly search footage stored in a digital format for specific incident types will be used more frequently. The result is that CCTV will move from the traditional role of deterrent/prevention/threat to an effective prosecution tool."

However, Kalia from BiKal believes analytics can go beyond a simple filtration tool and become an active part of emergency services' responses: "Video analytics software can notify police if there is a congregating crowd, loud noises, loitering and other abuses of public order on the streets. ANPR (Auto Number Plate Recognition) systems communicate with databases and can allow police to identify stolen vehicles and detect traffic violations in an instant. The same systems can help health emergency services track a patient's health from a remote location and even provide remote bio-stats measuring heart rate, blood pressure and other vital stats with the aid of a camera and two-way communications. Like a virtual doctor, this can allow a surgeon or senior doctor to attend an incident in the field or en-route without being there."

Bippon Kalia from Bikal IP CCTV believes video analytics could notify police of congregating crowds, loud noises and other abuses of public order – thus taking an active part in the emergency services' response.

But taking the power out of the hands of human operatives and into the hands of computers is not only unsettling for many, but it is also a potential security issue. 802's Close is wary of an over reliance on the use of analytics. "You have to pick your applications where you use analytics software. It should be there to enhance the abilities of your monitoring staff, not replace them. It should filter out the unnecessary events that monitors have to deal with. So in controlled environments, it is a great tool, but it has to be done in the right context and the configurations have to be very accurate, as putting cameras in the wrong position or with the wrong rules could have an adverse affect on the surveillance operation.

"They can be very good for setting up, say, intrusion lines around a power station. An organisation might not want anyone to come within 20 yards of their fences, so analytics is quite good at monitoring that. But many people claim that analytics can take on a much more complex role, such as finding left luggage in airports. We are reluctant to recommend this type of software as we are dubious about the success and accuracy of the results that can be obtained. You would inevitably get a lot of false alarms flagged. This leads to operators ignoring alarms and then you have compromised the usefulness of that system."

But one aspect where the growth in software analytics is unarguably a beneficial factor is in the increasing movement to standardise IP technology. At present, customers are limited in the cameras, systems and analytics software they can use by the fact that many of these products cannot work together as there is no standard to which all IP wireless products conform. This causes problems for groups such as the emergency services, as Kalia explained: "If a crime takes place now, the police have to send someone to collect the video, they have to make a recording, but the technology might be different so they may not be able to get the recording straight away – this slows them down. Standardisation would allow a centralised system where it would be possible to patch into any CCTV camera in the country from one central place, enabling the police to work much much faster. Companies like Sony, Axis and others are trying to develop a standardised IP protocol, and if that was to occur then it would be very easy to create a centralised system. It is easy to develop the protocol, but it is hard to get everyone to agree with it."

It may be difficult, but the increased demand for IP products and software that can be used across all platforms is starting to force manufacturers into action. Some, though, are pursuing an IP standard voluntarily. March Networks is one such company and it is a key member of the Open Network Video Interface Forum (ONVIF) which was set up for the development of a global standard for the interface of network video products.

Ely Maspero, March Networks' Director for Marketing & Communication EMEA, explains: "Standards have played virtually no role in IP video security until very recently, but that is quickly changing. The bigger manufacturers are

Andrew Gibson of ntl:Telewest explains that with over four million cameras in the UK, the filtering of footage is growing in importance.

reluctant to standards, for the risk of losing competitive power (they prefer to sell their own end-to-end solution). On the other side, they need to begin the standardisation process as standards promote interoperability and reduce integration cost. With the introduction of advanced IP cameras and encoders, which offer higher resolutions and embedded analytic capabilities, customers have benefitted from an increased choice of devices and capabilities. A lack of standards, however, has kept some of these devices out of reach. In addition to limiting customer choice, this standards deficiency increases integration costs for solution providers and manufacturers."

This is not to say that analogue systems are redundant. Analogue cameras can be fitted with products that convert the analogue signal to IP and software analytics can work with analogue systems. However, IP offers the mobility and flexibility, as well as the potential for higher specification cameras that allows software analytics to work more effectively and standardised centralised solutions to become a reality.