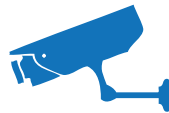
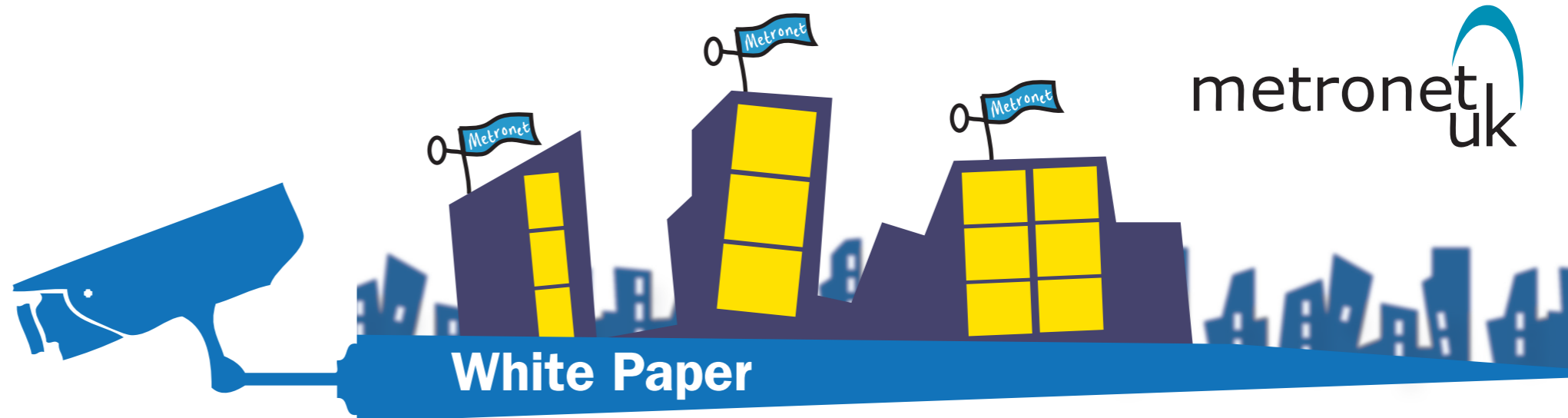


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MOBILE WIRELESS CCTV

*The Benefits and Considerations
for Public Authorities*



Introduction

CCTV Providers are coming under increasing pressure to make best use of resources and reduce costs where possible.

The current financial climate dictates that all CCTV users need to 'do more with less'. In CCTV terms this is likely to mean relocating or decommissioning cameras that can no longer be justified and becoming smarter and more dynamic with existing resources rather than investing in new infrastructure. One way to make this possible is to convert traditional fibre connections to wireless, an option that is being selected by more and more CCTV Managers across the country.

Where cameras have been in situ for a long time, the original purpose for the installation may have passed, or its specific location may no longer be appropriate. For instance, a camera may have been installed to monitor Anti Social Behaviour outside a row of shops that has since been boarded up, or a camera's view may have been obscured by tree growth.

The Information Commissioner's guidance is clear on this matter, and states that, "any CCTV images must be adequate for the purpose for which you are collecting them" (CCTV Code of Practice revised edition 2008, Information Commissioner's Office). Irrespective of any requirements to save money, the ICO may take the view that a camera that is largely unused or unusable should be moved elsewhere.

Clearly, in addition to optimising return on investment, wireless CCTV should be considered as a means of ensuring that CCTV managers meet their obligations under the Data Protection Act.

Wireless CCTV, if delivered well, is capable of supporting fibre equivalent images and introduces a level of flexibility and cost effectiveness that has been hitherto unknown in

a public space CCTV context.

This paper analyses the benefits of wireless CCTV and examines its use in delivering efficient and well-managed CCTV Services.

The Benefits of Wireless CCTV

There are many benefits to be had from using wireless in place of traditional fibre optic CCTV connections.

Ease of Installation

A key attraction of wireless transmission is that there is no need for civil works when installing the cameras (provided there is an available power source such as from a lamp column or building). In contrast, a traditional fibre optic installation will normally require a subterranean duct to carry the fibre, possibly involving a road-opening notice via the Highway Authority and could take 8-16 weeks to deliver. Issues such as distance to the column, whether or not the duct crosses a footway or requires road closure all impact upon installation time. Also, at certain times of year (such as the festive period) there may be a moratorium on civil works.

Wireless cameras can be installed in a fraction of the time; normally measured in days or even hours. If there is an urgent requirement, such as in response to a gun crime incident or a terrorist threat, wireless technology now means CCTV is a viable rapid deployment option.

Wireless CCTV is of particular value to the police when managing large events or demonstrations where cameras are needed quickly,





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often in areas where they haven't been installed before and, where they are only needed for temporary use.

Case Study

When the English Defence League protested in Bolton in 2010, the police identified a number of poor coverage zones in the town's CCTV coverage. It would not have been possible to install permanent cameras so Metronet deployed a temporary wireless CCTV solution that included both CCTV cameras and infrastructure to backhaul images from existing CCTV cameras back to Greater Manchester Police's strategic Gold Command Centre ten miles from the town.

The intention was to use the local CCTV installations to provide a strategic oversight of the event including:

- Temporarily deployed CCTV cameras
- Cameras from Bolton Council's CCTV Control Room
- Cameras from Bus and Train Stations
- Body worn evidence gathering cameras

The cameras and wireless infrastructure were easily and quickly installed specifically for the one-day event, could be removed when no longer required and the quality of connection widely acknowledged as being comparable to fibre.

Flexibility and ease of camera relocation

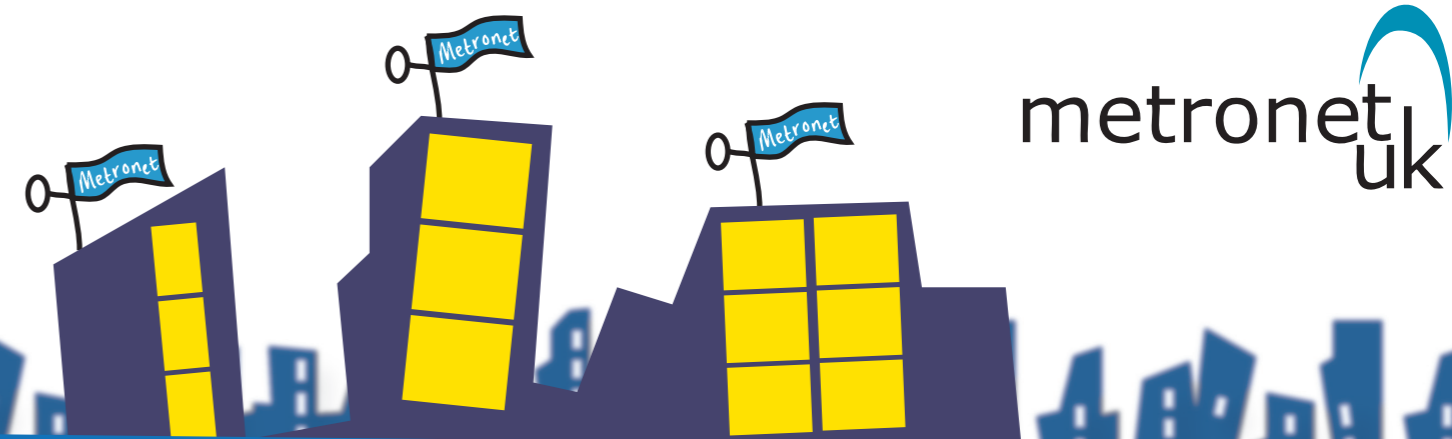


Whenever CCTV is installed, there is always the potential for displacement of crime, which quickly results in the camera becoming redundant. The area might

evolve, for example, as a consequence of regeneration with the original purpose for the camera changing or disappearing. In either scenario, it would be logical to move the camera to a place where it would be more useful. Relocation of a fibre circuit even across short distances could cost many thousands of pounds and take an average of 3 months to complete. Consequently, there are a significant number of CCTV cameras in the public domain that do not provide best evidence and as such do not represent good value for money.

In comparison, wireless cameras as we have seen can be relocated within a few days (or even hours) for hundreds of pounds rather than thousands, ie a fraction of the cost to move fibre. So, for the first time, CCTV can be delivered and managed in a truly strategic and dynamic way. Wireless CCTV cameras can be easily moved in response to changing crime patterns or simply just to provide the optimum view of a hotspot thereby fitting most closely with local needs. If there is a spike in crime or antisocial behaviour, then a wireless CCTV camera can be easily installed in accordance with that local priority.

Community stakeholders may now reasonably be consulted to determine a 'wish list' of locations where CCTV is desirable. Plans to respond to predictive crime pattern analysis that points to potential future needs can be realistically drawn up. This could be a list that analyses those neighbourhoods or areas that have historically been challenging in crime and disorder terms, but which do not benefit from CCTV investment.



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CCTV Operators will already be aware of areas of poor coverage' within existing systems that would benefit from a new camera. However, this sort of planning exercise is likely to result in a strategic evidence based business plan for a programme of relocation at timed intervals that should be followed by quarterly or bi-annual reviews.

Ease of relocation will also be attractive to the managers of traffic based CCTV systems, allowing cameras to be relocated to manage traffic congestion or road works for example. An excellent example of where the flexibility that wireless CCTV affords has proven invaluable is in Moss Side, Manchester.

Case Study

In the wake of the shooting of Jesse James in 2006, Greater Manchester Police commissioned Metronet to install a 24 camera wireless CCTV system throughout Moss Side, with the aim of managing gang activity. Local police worked in partnership with local community groups to determine the initial camera locations. It was recognised that a dynamic approach to determining CCTV camera locations had to prevail; taking into account the large geographical area to be covered; the physical layout of the housing (mainly high density, Victorian terracing); and the wish to avoid a feeling of 'over-surveillance'.

The number of available cameras would never be sufficient to manage all the pinch points where there could potentially be crime and disorder concerns and, as such, police had to make the cameras work harder, which meant that they would have to be moved regularly in response to criminal activity. Police therefore made it known to the community that they intended to be flexible with camera locations; an approach that continues today with CCTV cameras in Moss Side regularly relocated to

ensure that best value is being derived from the camera stock. This flexible, partnership based approach to CCTV management has helped contribute to significant reductions in gun crime in the area.

Cost Savings

Changes in the way that fibre optic connections are priced makes wireless a more cost effective solution than ever before. In recent years CCTV Managers have increasingly had to cancel fibre circuits in the light of 5-10% year-on-year revenue increases, favouring wireless transmission instead. Whilst such a change is likely to require a capital investment, the initial outlay can often be easily recouped in the ongoing revenue savings overtime (operating costs are reduced by changing the communications infrastructure).

The ability to easily relocate cameras has led to some Local Authorities considering rationalising their CCTV provision entirely and reducing camera numbers as they are now able to easily deploy CCTV cameras where and when they are most needed. Some CCTV managers estimate that camera stock can be reduced by as much as 50% if the potential to manage cameras dynamically and to relocate them easily is realised.

Additionally, should managers have a stock of camera spares on the shelf, they can easily be reused and redeployed through use of wireless technology, helping to reduce initial outlay.



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Issues to consider

A Process for easy Installation

To reap the benefits of mobile CCTV, multi-agency partnerships and protocols may need to be developed. One of the more important partnerships is with the Council's street lighting and planning teams to allow use of lamp columns for installations.

Whilst not all lighting columns will be suitable for mounting a CCTV camera, the majority of wireless CCTV camera installations are sufficiently lightweight and small to be mounted to a column without causing undue wind stress. Certain structures should be avoided, such as concrete columns and creased light steel or aluminium columns. Short columns should also be avoided to reduce the risk of vandalism. Wireless CCTV cameras should be installed in such a way as to avoid drilling the column for either power or mounting so as not to compromise the structure.

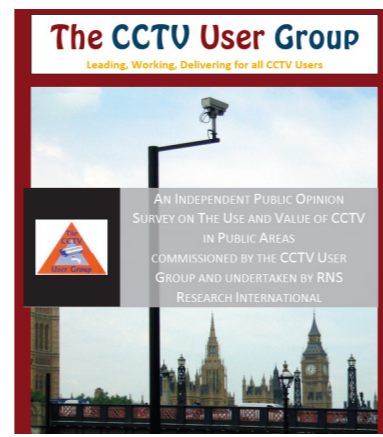
It is also important to be able to provide coverage of an extensive geographical area, which normally means acquiring high sites for the installation of wireless base stations. To this end, government buildings, Housing Association properties and private enterprise buildings can prove invaluable; however good working relationships with the owners need to be fostered and adherence to rigorous health and safety procedures observed. There is also likely to be a contractual obligation to protect the interests of the Landlords.

Managing Community Expectations

Any CCTV provider considering CCTV in a public space environment must consider the expectations of the community. Making CCTV mobile does not come without risks, however these can be mitigated through a good

communication programme.

The recent public perception study commissioned by the CCTV User Group (An Independent Public Opinion Survey On The Use And Value Of CCTV In Public Areas, The CCTV User Group, September 2010) demonstrated that 73% of people recognise CCTV as a deterrent to crime in their local area and believe that crime would increase should cameras be removed. There are therefore likely to be members of the community who develop an attachment to what they feel is 'their' camera and will feel that once the camera is removed, that crime will increase.



In some cases, cameras will have been installed primarily to provide reassurance. For example, following a particularly serious crime, such as a firearms offence, a camera might be installed temporarily to support police efforts to repair community confidence. In such circumstances, care must be taken to ensure that every effort is made to manage the expectations of the community, and where the camera is not to remain permanently, this needs to be made absolutely clear to all stakeholders.

Managers implementing a wireless CCTV programme therefore need to carefully manage the communities' expectations of CCTV provision through residents meetings and focus groups as well as working closely with local police and partners.



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Operational Requirement

When a wireless camera is installed or relocated, it should be treated in a similar way to a new installation with system owners consider a number of important issues.

Is there any potential for displacement of crime or Anti Social Behaviour?

Are there any visual obstructions such as trees that will reduce the effectiveness of the camera in future and is the lighting adequate?

Sustainability - is redevelopment likely in the near future which will negate the need/effectiveness of the camera.

Horizon scanning - what is likely to be in this location in a few months / years time?

Visual intrusion potential – can the camera be located to ensure maximum respect for personal privacy?

Shared camera use - community safety, traffic management, traffic enforcement and the monitoring of street works.

Design to allow future re-deployment.

CCTV System managers are advised to consult the recently released standards for Operational Requirement available from the Home Office Scientific Development Branch.

Technology

Choosing the best technology to meet the operational requirement is vital to ensuring that all the benefits of

wireless CCTV outlined in Section 2 can be realised. Where consideration is being given to converting existing communications infrastructure to wireless technology, CCTV Managers will wish to consider whether the camera heads themselves are suitable. Wireless technology can be used to support the majority of camera types; however whether that camera can then be made mobile will depend on issues such as weight and housing. For example, it is unlikely that a camera in a heavy shoebox housing would lend itself to relocation between street lighting columns.

It should always be remembered that wireless is a fundamentally unreliable technology and subject to a many sources of interference, which can lead to poor image quality, pixilation, jitter, and latency. Depending on the scenario and the budget provision, some of these problems may be seen as acceptable trade-offs however ultimately these are issues that can be eliminated through careful network management of the wireless application.

Conclusion

Wireless transmission for CCTV can now be delivered at higher quality than ever before. In a climate of reducing budgets, it is no surprise that the CCTV market has seen an increase in the take-up of competitive, cost effective wireless solutions that are allowing public bodies to use CCTV in a more effective manner. Wireless CCTV when managed and deployed correctly can help to make a positive difference to the lives of our communities and to reduce crime and disorder.

