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The picture is not clear
How many CCTV surveillance cameras in the UK?

A study by the BSIA

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Executive Summary

The number of CCTV surveillance cameras has been discussed in the UK for many years, yet the issue should not be how many cameras are installed, but whether they have the ability to perform their task to achieve the user's design performance whilst ensuring the ICO CCTV guidelines are adhered to. Having an understanding of the estimated number of CCTV surveillance cameras in a property category can aid in the development of standards and guidelines within that category. Previously there has been little specific research to verify the numbers of CCTV surveillance cameras per property sector and often the quoted figures are based on extremely small surveys carried out for other reasons. One obvious conclusion of the BSIA work is that the number of cameras operated by private companies and organisations far outstrips those of the police and local authorities by a factor of perhaps 70 to 1. In attempting to estimate the number of cameras it has confirmed beliefs that producing an accurate estimate with available information is fraught with difficulties and any quoted figures, including those presented in this document, are open to challenge.

The British Security Industry Association

The British Security Industry Association (BSIA) is the trade association for the professional security industry in the UK. BSIA represents the interests of those companies and organisations that manufacture, distribute and install electronic (including CCTV) products and systems, physical security equipment, those who provide security guarding and consultancy services and alarm monitoring and receiving centres who monitor security and safety systems including CCTV systems both in the public and private sectors.

Acknowledgements

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1. Introduction
1.1 Background to the study

The typical report about CCTV tends to use language derived from dystopian visions of the future, such as "1984", that play on preconceptions about the use by state or police controlled societies of spies in the community. It is on this basis that many studies and media reports about CCTV surveillance concentrate on the control of the proliferation of cameras, the cost of their maintenance and operation and whether they are successful or a waste of resource. CCTV cameras are frequently portrayed as an object of fear.

In contradiction the public expect every criminal act to be caught on camera and for pictures to be available of suspects within seconds of an incident.

The truth as seen by those closely involved with the British security industry is more mundane. Practitioners understand that most cameras are installed as one of the many possible security measures to reduce the criminal threat to property and to the public rather than to control the lives of the public.

Before this study was carried out the question remained as to what are the numbers of cameras per property sector in the UK. Without this knowledge it would be unclear what the consequence of government measures to regulate parts of the industry would be. Estimates of the cost of regulation are impossible without knowing the size of the industry. Equally the public could be misled as to the effectiveness of schemes.

The BSIA are additionally aware that there have been many occurrences when the surveillance images that assisted the criminal justice system came from privately owned CCTV. Decision makers unaware of the proportion of such cameras might chose to ignore them and, as a result, regulation might not work to improve their quality or accessibility to the police.

In carrying out this study the BSIA hoped to improve awareness about the size of the privately operated CCTV industry especially in comparison with the state operated sector and gain a fuller understanding of the scale of UK CCTV operations.

For publicly owned cameras an organisation called Big Brother Watch used the Freedom of Information laws to obtain a UK total of 59,753 CCTV cameras controlled by 418 local authorities in Britain (figures for 2009)[1]. This number is thought to be accurate but includes only the cameras controlled by those local authorities. BSIA believe the proportion of those cameras in comparison to the total number installed to be very small.

The major purpose of this document is to outline a set of methods that can be used in combination to produce an estimate of the number of cameras per property sector or to assist with correlation of other estimates. The BSIA performed two exercises (in 2011 and 2012) with the intention of producing these estimates. Whilst attempting to create the estimates it became obvious that the factors contributing to the prevalence of cameras are very complicated and the currently available information is insufficient to produce accurate estimates. Some of the reasons for this are described in this document.

There are many difficulties with carrying out estimates into the number of cameras per property sector. In the absence of any registration or licensing[2] scheme anybody can install, move or remove CCTV cameras and so the only current way to estimate the number is to attempt some method of actual counting. There may be significant differences between estimates in terms of which types of camera are included. For example estimates may include only cameras viewing

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[1] "Big Brother is Watching", Big Brother Watch, London, 2010

[2] Although the possession of cameras viewing public areas requires registration of the owner with the Information Commissioner's Office the registration applies to the organisation and in no way indicates the location or the number of cameras used.

public space, they may exclude mobile cameras, or they may exclude cameras that are not connected to recording devices. There can be confusion regarding cameras used for safety purposes or those used in conjunction with ANPR (for example at car park entrances).

1.2   The diversity of CCTV camera use

The BSIA estimates consider all cameras used for security surveillance, related monitoring (e.g. ANPR), and safety aspects (as these could also be useful for security purposes and there is often significant overlap). It does not include cameras used for manufacturing monitoring. The BSIA estimates include all cameras whether or not used to survey public areas. Security cameras are frequently positioned in buildings to watch areas to which the public should have no access or are to supervise staff (e.g. checking for theft of cash by staff from tills, etc). The BSIA estimates also include cameras that may only be used for live viewing and are not recorded. This latter inclusion is discussed in more detail later.

For example a safety camera may be installed to watch a railway level crossing. Whilst intended to observe the crossing to check for people or vehicles on the line it can also watch for attacks on the railway or other criminal acts.

It would be possible to carry out surveys including a more limited number of cameras and in some circumstances these may be more meaningful. For example the restriction could be to cameras that are mounted in places to which the public have access. However a definition of "public" is difficult to determine. Whilst a camera mounted on a pole in the centre of a high street would probably be considered "public" what would the opinion be of one mounted in an entrance corridor in a school? If a camera watching merchandise in a shop views only the interior of the shop is this also a public area and would that opinion be different if the view included the pavement outside the window?

1.3   How the use of CCTV affects the number of cameras needed

The simplistic view of CCTV is that the owner puts a camera in a position to view what is happening. However the reality is somewhat different. There are a number of factors that affect this such as:

- Are images from the camera recorded?
- Is the camera view continually monitored?
- Can an operator change the view from the camera (panning, tilting or zooming)?
- What is the quality of the camera?
- What is the intention of the camera?

We can look at these factors in more detail to see how they affect the number of cameras that may be necessary for monitoring. In many cases a compromise is necessary for reasons of economy but where finances allow an owner may choose to install more cameras.

If the major purpose of the installation is to allow for review of images to determine what has happened in the past then recording is an obvious necessity. The use of recorded images allows for a viewer to pay far more attention to part of the scene and, in some cases, make use of newer technologies that allow for sections of the scene to be seen in greater detail. This could mean that fewer cameras of higher resolution may be needed in comparison with the situation a decade ago. However if the views from the cameras are not continuously monitored then there is no opportunity for an operator to adjust the view as an incident occurs and therefore, to ensure that all possible areas are recorded in sufficient detail, many more cameras may be required.

When choosing the number of cameras in an installation it is important to consider what the aim of the system is and the intention to which each camera will be put. For example in a shop the aim could be to act as a deterrent to shoplifting and therefore a large number of cameras viewing stock on the shelves may be necessary (if only as a deterrent), alternatively the aim could be to ensure a good image is obtained of a suspect leaving the store in which case the camera will need to be positioned and configured to ensure this is possible. In some cases the owner may choose to achieve both aims.

In a situation where the system owner wishes to record detailed images over a wide area it may be necessary to mount a number of cameras close to each other whereas if it is only an overview that is required then a single camera configured to view a wide angle may be sufficient.

We can see that the number of cameras needed to fulfil the objective of a CCTV installation will vary greatly according to that objective. We might consider that a public space system installed by a local authority with monitoring and cameras capable of being rotated and zoomed may require fewer cameras than a similar system used in a high-risk location with an expectation of terrorist activity. Individuals and organisations concerned about the proliferation of cameras should be aware that a larger number of cameras does not necessarily mean that they are under more scrutiny because it may imply that they are not being watched at that moment in time at all but that more detailed images are being recorded in case an incident occurs. In order to comply with the Data Protection and Human Rights Acts it is not permitted to store such images indefinitely and a procedure must exist for the deletion of recordings after a period usually between two and four weeks.

Far more cameras may be necessary to cover a smaller internal area than an outside public space because allowance must be made for obstacles such as pillars and shelving. Public space cameras tend to be mounted in a higher more advantageous position so that they view is less likely to be blocked by other people. Even when private owners mount cameras in an external location they may be prevented from using advantageous positions because compliance with the Data Protection and Human Rights Acts (as indicated by the Information Commissioner's CCTV Code of Practice) places restrictions on them from monitoring locations outside of their property. Cameras frequently have "masking" that limits their field of view for this reason. This can also result in use of a greater number of cameras.

This discussion about the use of cameras has so far implied that cameras are either monitored by an operator or recorded for later viewing following an incident. There are however cameras which have no recording and are not routinely monitored. These may be used to allow for an operator to check on a situation without leaving their post (for example, to answer the questions "are there any free parking spaces in an office car park" or "is there a queue to enter a building"). Equally these cameras can have a deterrent effect. Traditionally many shop owners have used a convex mirror to allow them to check areas of a store that are otherwise hidden and in some cases cameras have replaced this use. The owner may not record the pictures but equally may not spend any more time viewing the images than he would have spent staring at the mirror. Frequently this type of camera is linked to a monitor that is clearly visible to shoppers to establish deterrence.