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The implementation and impact of crime prevention / crime control open street Closed-Circuit Television surveillance in South African Central Business Districts*

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Abstract

The use and implementation of public open street Closed Circuit Television (CCTV) surveillance systems in Central Business Districts (CBDs) in South Africa solely for the purpose of crime control (reducing street crime) or crime prevention (deterrence) has in South Africa been a relatively new intervention within the broader context of crime prevention programmes. One of the drawbacks to its implementation for this purpose has been its costs and the inability of the South African Police Service to fund such implementation in the light of other more pressing priorities and demands on its finances and resources. However, the initiative to start implementing and linking CCTV surveillance systems in CBDs in the major metropolitan cities of South Africa to local police services was taken in the mid-1990s by Business Against Crime of South Africa (BACSA). This article, using case study overviews from four South African CBD areas (Cape Town, Johannesburg, Pretoria (Tshwane) and Durban), traces CCTV use as crime control or prevention surveillance, how they were implemented, the rationale behind their implementation and the operationalising of them in terms of preventing street crime and its uses in other surveillance. In addition it also looks at this initiative from the perspective of the growth and commercialisation of the management of these services, and the co-operation and co-ordination structures in partnership with the South African Police Service (SAPS). Furthermore, it reviews the purported impact on the reduction of crime of these systems in CBDs and finally the application of public crime surveillance by the CCTV control room operators (private security) in co-operation with the police (response team) and the role it plays in the observation, recording, arrest and conviction of suspects.

* This article emanates from a bigger UNISA work-in-progress research project examining the implementation, funding, commercialisation, partnership agreements, information sharing protocols, management, technical and operational requirements, crime control/prevention/displacement (impact on crime levels), legal aspects (surveillance & privacy, use as evidence), public perceptions towards and experience of the use of CCTV in the CBDs of the major metropolitan areas (13) of South Africa.

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Introduction

Over the last ten years, with the growth in crime levels, increase in public fears about safety and declining service delivery from public police (who in turn were battling with cuts in funding, manpower shortages and lack of resources), many people and organisations in South Africa (private security industry, municipal authorities, businesses, the public and even the police themselves) in some form or another utilised and made use of the resources offered by the private security industry in the fight against crime. In particular such security services revolving around security villages, gated neighbourhoods/enclosed areas and armed patrols of residential areas by private security personnel. Among the more visible replacement of police in certain security functions have been those of responding to alarms; surveillance services; certain types of investigation services; security services at gated neighbourhoods/enclosed areas and security villages, and vehicle security and tracking, often in conjunction or in partnership with the South African Police Service (SAPS) and the various Metropolitan Police services[2] (See Minnaar & Mistry, 2004; Minnaar & Ngoveni, 2004; and Minnaar, 2005). Among these 'private security type' services have been the more specialised one of Closed Circuit Television (CCTV) surveillance, in particular the provision of CCTV surveillance services in the Central Business Districts (CBDs) of the main metropolitan areas of South Africa as a crime prevention and crime control measure in support of other policing activities.

However, CCTV in South Africa as a prevention, surveillance and detection measure was nothing new. In South Africa early use of CCTV was implemented by the mining industry on diamond mines and at gold/precious metals refineries, largely to prevent the smuggling and pilfering of diamonds and precious metals from these facilities and mines. The gambling industry (casinos) in South Africa was also one of the first to use CCTV for surveillance purposes of gamblers and patrons in their establishments. But these uses were largely 'in-house' and on private property. At a later stage its benefits were recognised by the private security industry who utilised it for the provision of surveillance and access control largely at commercial, retail

[2] The Metro Police services in South Africa - as opposed to the national South African Police Service (SAPS) – with the exception of the Durban Police, are of relatively new establishment, even though they in some cases were a mere amalgam of previous city council traffic police and security departments, i.e. a mere name change occurred. The metro police were formally established with the promulgation of the South African Police Service Amendment Act (No. 83 of 1998) with municipal police being established entirely independently of the SAPS but funded by and accountable to local or city governments. The motivation behind their establishment was the amalgamation of various town or city councils into larger metropolitan areas – and such metropolitan councils would therefore be able to fund such metro police agencies as an extension of their provision of safety, security and crime prevention programmes in urban areas. Up to the end of 2006 the following Metro Police have been established: Cape Town; Johannesburg; Tshwane (incorporating Pretoria, Centurion, Akasia municipal councils); Ekhurhuleni (incorporating the towns of Benoni, Boksburg, Germiston and Springs on the East Rand area of Gauteng Province). The other major cities have as yet not formally established metro police agencies with their traffic police departments continuing to operate as is with the responsibility of traffic control and enforcing municipal by-laws. The biggest difference between the SAPS and these metro police services being the fact that none of the latter have been granted an investigative (detectives) capability and therefore largely concentrate on crime prevention, traffic control and the enforcement of municipal by-laws.

and business premises or private residences (and more recently at so-called 'security villages/estates').[3] Its use and implementation in CBDs solely for the purpose of crime control (reducing street crime) and the prevention of crime (deterrence) has in South Africa been a relatively new intervention within the broader context of crime prevention programmes. Within the South African context one of the drawbacks to its implementation for this purpose has been its costs and the inability of the South African Police Service to fund such implementation in the light of other more pressing priorities and demands on its finances and resources. However, the initiative to start implementing and linking CCTV surveillance systems in CBDs in the major metropolitan cities of South Africa to local police services was taken in the mid-1990s by Business Against Crime of South Africa (BAC(SA))[4] (see Penberthy, 2001).[5]

This article traces the various initiatives and looks at the different rationales for installation, the actual implementation, growth, commercialisation of these services, co-operation and co-ordination structures in partnership with the South African Police Service (SAPS) and perceived impact on crime reduction of these systems in CBDs. This is done by means of selected case studies from the four major metropolitan areas of South Africa, namely Cape Town, Johannesburg, Durban (eThekweni)[6] and Pretoria (Tshwane).[7]

CBD versus private urban residential space use

While the public open street CCTV surveillance systems in CBDs in South Africa slowly got off the ground and became operational only from the late 1990s and early 2000s onwards their

[3] The South African use of CCTV appears to have skipped some of the implementation steps of uses as, for instance, in the UK. For example use on rail transport systems, soccer violence monitoring or of protest marches, demonstrations or strikes. As early as 1975 CCTV had been permanently installed on the London Underground (rail system) in order to combat assaults and robbery on staff (McCahill & Norris, 2002: 8). During this time Scotland Yard in London also realized the utility of using CCTV to police demonstrations and protests while soccer authorities received grants to install cameras at stadiums with police using mobile CCTV outside of soccer grounds to combat crowd hooliganism. (McCahill & Norris, 2002: 8-9). In South Africa CCTV has not been installed at rail stations at all although from 2003 the national rail operator, Spoornet, has installed a comprehensive goods yard and rail line protection CCTV surveillance system because of the high level of theft occurring. Moreover, the videoing of crime scenes, protests and civil unrest has been a relatively new innovation. SAPS budgets did not extend to such equipment being placed at individual police stations although the establishment of a Police Video Unit (which was largely used for promotional and publicity work or for broadcasting internal TV programmes) was done in the mid-1980s.

[4] Business Against Crime of South Africa was established in 1996 when the then State President, Nelson Mandela, invited South African businesses to join hands with the government to combat crime. BAC(SA)'s purpose was therefore to work with the government and civil society on specific crime prevention projects that impacted on the country's transformation by increasing confidence, investment and job creation.

[5] For more detail on the implementation of BAC(SA)'s CCTV surveillance systems in CBDs see Penberthy, 2001. This paper can be viewed at http://www.crimeinstitute.ac..za under publications/Papers of the 2nd World Conference…).

[6] The name for the metropolitan council consisting of the amalgamated municipal councils in the Greater Durban area

[7] The name for the metropolitan council consisting of the amalgamated municipal councils of Pretoria, Centurian and Akasia in the Greater Pretoria region.

private property urban residential space CCTV surveillance systems counterparts have been a more recent phenomenon linked as they are to the exponential growth in security village housing complexes and gated neighbourhood enclosures. Initially such CCTV surveillance systems were not part of the general security arrangements for security villages or gated neighbourhoods. The provision of electric fencing on top of walls/barricades encircling such private estates or gated neighbourhoods backed up by inner patrols (sometimes) and guards at boomgate/barrier access control entrance gates was deemed a sufficient level of private security (see Landman, 2002, 2003 and 2004; and Kruger & Landman, 2003 for detail. Some of the legal issues around road enclosures are discussed by Tshehla, 2003).[8]

Where private security CCTV was being used was largely confined to shopping complexes, car parks at such sites and individual private residences. The use of CCTV at sites such as security villages and gated neighbourhoods was largely limited, if used at all, to single camera placements at an entrance gate merely to assist in identifying people/vehicles wanting to come in. However, with the continued high level of crimes (such as burglaries, house robberies and vehicle hijackings) occurring even inside these walled estate areas has seen (in the last twelve months) the placement and siting of CCTV cameras, not on perimeter walls or only at entrance gates but along the streets (i.e. outside of homes) inside these secure areas. While body corporates at security estates, largely on the advice of their security service providers, have been responsible for taking the initiatives for such CCTV installations, residents in a few neighbourhoods, particularly in Johannesburg and Pretoria, have also got together (as neighbourhood watches or part of Community Police Forums (CPFs) and funded the blanket installation of CCTV to cover the streets of their neighbourhoods. So in essence private property CCTV surveillance has now become – in these residential neighbourhoods – public open street surveillance systems as opposed to purely private residence/commercial building or business property surveillance systems. Traditionally the latter – being the forerunners of the bigger CBD systems – were mostly small stand alone systems not having '24/7' recording capabilities but being merely 'real-time', usually black and white, single screen viewing. However, while crime levels have been a

8 Karina Landman, a research architect/urban designer at the South African Council for Science and Industrial Research's (CSIR) Building and Construction Technology Unit (BouTek) is one of the few South African researchers looking at aspects of gated communities. Her research, done from 2001-2003, for a doctorate (title of her thesis is "An exploration of urban transformation in post-apartheid South Africa through gated communities and with a specific focus on its relation to crime and impact on socio-spatial integration") has specifically focused on the spatial manifestation of neighbourhood gating and road enclosures with the emphasis on the privatization of public urban spaces and touches on crime prevention through environmental design (CPTED). In her published work there was little emphasis or mention of electronic camera (CCTV) surveillance systems largely because, at the time of the research, they were not a part of overall gated community security systems except as single cameras at gated entrances and then only at the so-called private security villages/estates and not at the more general gated communities only having a boomgate road enclosure type of access control barrier. Besides Landman's work on gated neighbourhoods the only other significant research study in South Africa on this has been that of Prof. Beaty Naude which looked at selected gated community/private security village resident's perceptions regarding the impact of securitised neighbourhoods on the reduction of crime in their areas (Naude, 2003). Besides the security risk audit conducted at a security golf estate in Pretoria by Okkie Butler in 2003 (then a staff member of the Department of Security Risk Management, UNISA) – and which found that no CCTV at all was being used at this security estate as part of any security measures - the only other research that specifically looks at and analyses security control measures at gated or enclosed communities is the current (2007) project of the Department of Security Risk Management (mentioned in footnote 10 below).

factor for these recent 'private' CCTV installations the primary purposes and installation motivation at security villages/estates and patrolled or semi-enclosed neighbourhoods has remained residents' security and personal safety concerns per se.[9] In effect integrated blanket CCTV surveillance systems – privately funded – with multiple camera placements along residential streets (as opposed to CBD areas) is a very recent phenomena in South Africa.

Rationale and motivation for implementation of CCTV surveillance in CBDs

The initial inability to fund the installation of public open street CCTV by the national SAPS in effect led to an 'outsourcing by default' in terms of the provision of CCTV surveillance in a number of CBDs in South Africa. BAC(SA) took the initiative to fund the initial installation of CCTV systems in certain of the major metropolitan centres. In other cases funding was left up to the metro councils or local government structures. However, such outsourcing and the funding of installation and running costs has been a boon to the SAPS in that while they do not impinge on policing functions on the ground they provide an additional support service for them without requiring any financial outlay or expensive infrastructure. Accordingly, the police have encouraged such anti-crime surveillance and monitoring services without outsourcing or losing any purely policing functions.

The roll out in the late 1990s and early 2000s of each CCTV system in the CBDs of the major metropolitan centres of South Africa were largely couched in very similar terms, namely of being a 'major anti-crime initiative to boost safety in the city…" (Smith, 2001) with "technology catching crooks doing crime" (Boyd, 2004). However, it was envisaged that the CCTV systems in the major metropolitan CBDs would play a crucial role in firstly, monitoring theft or any other criminal acts; secondly the recording of offences and transgressions, i.e. allowing for the visual verification of events in and around properties and premises and in the case of public space CCTV activity in the streets and on sidewalks; thirdly, of assisting officers on the ground not only to respond but to respond quicker to incidences (thereby cutting down response times); fourthly, in assisting in the identification of transgressors (thereby enhancing success rate in arrest and convictions of offenders and its use as visual evidence in court); and fifthly, to act as a 'visible' deterrent in preventing the commission of these crimes; and finally the presence of the CCTV cameras would ultimately reduce crime. An ancillary aim was to reduce manpower costs (to police and security companies) and improve crime prevention efficiencies.[10]

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[9] This information emanates from preliminary findings from a Department of Security Risk Management, UNISA Research Project titled: *An assessment of the crime prevention impact of security measures/strategies at gated communities (security residential estates & enclosed neighbourhoods) in Gauteng.*

[10] Between 2001 and 2004 a multidisciplinary team undertook research on the deployment, rise and social and political implications of CCTV in order to study strategies for regulation in seven countries in Europe (Austria, Denmark, Germany, Greta Britain, Hungary, Norway, and Spain) (Hempel & Topfer, 2004: 1). One of the findings from the consolidated research undertaken by the UrbanEye research projects was that "CCTV is often deployed [in Europe] as an instrument of crime control" (Hempel & Topfer, 2004: 1).

With the implementation of the Cape Town pilot system in December 1998 the initiator, planning and operator partner of the CCTV project, the Western Cape branch of Business Against Crime (BAC(SA))'s, stated intention in the field of Surveillance Technology was:

> to work with the lead law-enforcement agency, the South African Police Service, in the first instance, in order to provide the technological tools that will assist the SAPS and other law enforcement agencies in ensuring the most economic and effective use of manpower
>
> (Penberthy, 2001: 1).

Moreover, after the installation of the expanded CCTV surveillance system in Central Cape Town CBD in early 1999, the sentiment was expressed that "the system will certainly increase fear of arrest in Cape Town city centre" (Own Correspondent, 1999) and with "the help of the cameras, a small group of Metro police officers could be 'everywhere all the time'" (the deterrence factor) (Hlahla, 2005a). However, it was also acknowledged that such a system "cannot on its own stem the rising crime nor help SA's overburdened criminal justice system." (Own Correspondent, 1999).

The extensions of the various metropolitan CCTV crime control and prevention programmes were based not only on the achieved successes of reducing crimes and increasing arrests but also on the identification of additional 'crime hotspot' areas (i.e. high level occurrence of incidents of crime) outside of the CBDs (where the initial systems were introduced). In the case of Cape Town these crimes were often linked to the high publicity crimes of mugging, robbery and bag snatching perpetrated against tourists (foreign and South African visitors to the city).[11] However, a wider efficacy was also (often erroneously) ascribed to the ability of CCTV surveillance systems to reduce, combat and control all sorts of crime. For example in 2004 at the launch of the extension of the installation of CCTVs to certain streets and intersections in the Seapoint suburb of Cape Town, the then Western Cape premier, Marthinus van Schalkwyk, publicly speculated that with the "….proper resources [i.e. CCTVs] and the highest co-operation between all spheres of government, drugs, gangs and violent crime can be beaten." (I-Net Bridge, 2004).

When the tender to manage the implementation of the Johannesburg CCTV system in the CBD, it was punted not only as part of the Gauteng Provincial Government's Department for Community Safety's crime-combating strategies but also in terms of the urban and business renewal plans for the city. It became a central pillar in local and provincial government authorities' plans – the so-called 'Safety Lung' Project of the Department for Community Safety and the City Council's Safer Cities Programme – to attract business and residents back to the city centre after years of decline and rising crime levels. At the time according to the Gauteng provincial Department of Community Safety's Deputy Director-General, Sylvester Rakgoadi,

[11] At the time of the Seapoint CCTV extensions (March 2004) the Western Cape premier, Marthinus van Schalkwyk, announced at the launch that "We are particularly pleased that the intersection of Portswood Road and Somerset Road will be covered, as this has been a trouble spot where high volumes of tourists and pedestrians have been plagued by criminals" (I-Net Bridge, 2004).

the use of CCTV as part of the Safety Lung Project and Safer Cities Programme would "assist in the prevention and detection of crime, help maintain public order, enhance the sense of security of the public and reduce vandalism." (Own Correspondent, 1997). However, in August 2001, at the formal opening of the control centre (in the Carlton Centre building) for the newly-installed and expanded Central Johannesburg CCTV system, Johannesburg's Executive Mayor, Amos Masondo, had punted the system's uses not only for:

> crime prevention and deterrence, but also to assist city management in traffic control, fire detection, emergency services alerts, and even refuse collection [management by identifying refuse pile ups in streets]
>
> (Own Correspondent, 2001).

These sentiments were echoed by the BAC(SA) managing director, John Penberthy, at the same function when he said that:

> once the system is fully installed the city will have a highly effective tool for managing crime and for ensuring the inner city is well managed….. [and] as a result of the system both law enforcement agencies [South African Police Service and the Johannesburg Metropolitan Police Department] are able to operate more efficiently with limited manpower resources.
>
> (Own Correspondent, 2001).

Other aspects of good civic governance were also emphasised. According to Neville Huxham,[12] in addition to the incident reporting with their track and trace capabilities the BAC-installed system in Johannesburg, in monitoring the built environment of the city, could assist with the "proactive management of the city…through [their] macro-area surveillance and facilities management" (Balancing Act News, 2005). In marketing terms the operating company (Cuincident) of the BAC(SA) system in Johannesburg claimed to provide:

> an integrated solution to macro-area security and facilities management, and delivers real-time data with which it is possible to analyse patterns, predict behaviour and offer pre-emptive deployment options
>
> (Boyd, 2004).

By endeavouring to be proactive with a quick response time (not only to crime but also to such things as broken traffic lights and burst water pipes) the system would thereby subtle hold the Metro Council accountable if they did not respond quick enough to such urban management issues since "unmanaged space can be chaotic so crime flourishes" (Balancing Act News, 2005). In other words, a well-managed CBD[13] would close down the space for crime to exist.

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[12] Marketing and Communications manager of Cueincident, the commercial company set up out of the BAC(SA)'s Surveillance Technology division.

[13] Faulty traffic lights were immediately spotted by the CCTV system and reported. Other municipal management issues such as gushing water leaks were similarly spotted, reported and plugged. Electricity outages, broken powerlines, overflowing sewage – even the build-up of uncollected refuse and garbage - get noted and reported by the Cueincident operators in the central control room. In short any 'incident'

Besides better civic management of services and the freeing up of manpower other economic benefits of the installation of such public crime control CCTVs in CBDs were also put forward in the Johannesburg project. For instance that the control room operators would also be able to "issue parking tickets so our [BAC(SA)'s] cameras become revenue generators for the city." (Balancing Act News, 2005).

So, all in all, the CBD CCTV systems in South African metropolitan areas were being punted as solving or assisting the management of many inner city problems other than just crime control, crime prevention and the deterrence and reduction of crimes overall. However, the lead in the planning, designing, technical specifications and implementation (operationalisation) of such crime control specific CCTV surveillance systems was provided by the BAC-run Cape Town CBD system.[14]

Case studies of South African CBD CCTV systems

1. Cape Town

The BAC(SA) CCTV system in Cape Town was an offshoot of the security plan designed in the late 1990s by John Penberthy, the then CEO of the BAC (Western Cape), for Cape Town's (ultimately unsuccessful) 2004 Olympic bid in 1998 (Boyd, 2004). However, the planned CCTV installation for the Olympics was subsequently presented to the Cape Town City Council as a cost-effective crime reduction/prevention measure and to improve public safety in the city centre especially for foreign tourists.

The planning for the CCTV component of the Olympic bid Security Plan had been started by BAC in early 1996[15] with BAC conducting technical trials in Cape Town in 1997.The central Cape Town public CCTV surveillance system was launched in December 1998 with a pilot 12 camera project, while a full 75 camera footprint covering the Cape Town City Centre was commissioned in December 1999 (Penberthy, 2001: 2). The whole system was installed under

requiring urgent or speedy attention – from medical emergencies, fire alarms to traffic accidents – are spotted by the operators and the appropriate authorities are alerted (Mawson, 2004).

14 The Cape Town system was not the first CCTV surveillance system for CBDs installed in South Africa. A pilot in the Benoni CBD (a city on the East Rand of Gauteng Province) had been initiated in June 1995 by the Community Relations Division of the Benoni SAPS and the local City Council. Ten cameras, sponsored by private companies, were placed in strategic positions in the Benoni CBD. The trial phase was from March to August 1996, during which time various cameras and links were tested. The Emergency Control Centre of the Benoni Fire & Emergency Services was chosen as the most convenient and central location for the control room location (Glanz & Nacerodien, 1996: Executive Summary, np). This pilot system gave some valuable pointers to the BAC Planning Committee in terms of technical specifications and cost-effectiveness of such systems. In July 1995 The Durban metropolitan authority had launched [lans for the installation of 40 cameras in the central business district (CBD) but the primary aim of this system was the monitoring and controlling of traffic flow only with an additional 12 cameras to be installed by them along the Durban beachfront for the purpose of tourist protection and crime control (Glanz & Nacerodien, 1996: 1).

15 A research trip overseas had been undertaken by Neil Strauch (who was subsequently appointed as the Operations Manager for the newly-established Surveillance Technology Division of BAC (WCape)) to look at and compare various systems and operating practices of CCTV systems internationally (see Strauch, 1996).

the auspices of the newly-established Surveillance Technology Division of the Western Cape branch of BAC – at that stage the only branch in the country to involve itself in the establishment of public CCTV systems.

Concurrent to the BAC system in Cape Town, by mid-1999, seven other cities and towns[16] in South Africa had also either installed or planned pilot systems of CCTV coverage in CBDs. However, these systems appeared to have achieved varying degrees of success or effectiveness. In contrast the CCTV system in Cape Town achieved some dramatic success and a perceived decrease in street crime levels in the city centre. The Cape Town system soon gained a reputation for being workable and also became a model for the other cities and towns to follow (Own Correspondent, 1999).

Soon after its installation in December 1998 the pilot CCTV project of 12 cameras in Central Cape Town appeared to support the proponents' of these surveillance systems views on their effectiveness and utility in combating all sorts of crimes. In December 1998 it achieved the spectacular success (surveillance evidence) resulting in the arrest of six people believed to have been connected to the vigilante group People Against Gangsterism and Drugs (PAGAD) whose members were alleged to be involved in the bombing of police stations in Cape Town. In this specific case the speed and nature of the arrests had clearly demonstrated without doubt to the BAC managers the utility of a CCTV surveillance system. In January 1999, when the pilot project was expanded (to a 75 full camera footprint covering most of the CBD of Central Cape Town) the full benefits of such a system were once again graphically demonstrated. Late on a rainy night, with only a few details concerning a stolen vehicle the central control room operators manning the CCTV system noticed a car fitting the description sent out on the stolen car police report. By focusing in with one of the street cameras the car description was confirmed and four rapid deployment units were despatched converging on the identified stolen vehicle enabling the arrest of the occupants (suspects). This whole operation – from positive identification to arrest – took a mere one minute and forty-five seconds with the stolen vehicle only being able to travel four city blocks before being stopped (Own Correspondent, 1999). With these kind of successes the Cape Town CBD system was strongly being motivated by its supporters to be extended to other areas outside of the Cape Town CBD.[17]

In setting up the first business supported public CCTV surveillance system in South Africa for the Cape Town CBD the Western Cape branch of BAC encountered a number of problems. The first problem being to establish a set of technical specifications that would be adequate for the job. This is where many surveillance systems tended to fall short of their crime prevention task. In practical terms it is crucial for such systems to have in place three basic components of the process, namely a skilled spotter/observer (control room operator); the ability to move

16 These were Johannesburg, Pretoria, Durban, Port Elizabeth, Kimberley, Benoni and Pietermaritzburg.

17 In March 2004 the Cape Town Unicity budgeted a sum of R4,3 million to extend the system and install eight additional CCTVs to cover the areas from Buitengracht Street through Somerset Road and Seapoint to York Street. (I-Net Bridge, 2004).

seamlessly from one camera to another;[18] and finally the speedy reaction of rapid deployment units. According to the then MD of BAC (Western Cape), John Penberthy, these three aspects are in fact critical for the success of a CBD CCTV surveillance system (Own Correspondent, 1999).

In order to achieve professional standards and the appropriate technical specifications (adequate to the task) for the Central Cape Town CCTV project BAC(WC) went through a whole research and tender process so that well-researched technical and operational (drawing on international experiences) standards could be set to support its effective implementation. In addition, BAC developed a specific conceptual framework of business principles for achieving sustainable operations. To this end a Business Plan (long-term) was developed incorporating business costing, a proper operating budget, a marketing plan (a lot of thought was put into identifying potential customers for the Cape Town system both nationally and internationally) and how it would be funded and operated in the future. The BAC Cape Town system combined not only a purely crime prevention function but also that of service provision. Locally BAC identified the police (SAPS) (catching criminals) and the city's traffic department as the foundation clients. Within the CBD area all rate-paying businesses were approached to contribute towards the system's operating costs. This was done either by means of an additional business levy paid to the local Chamber of Commerce or merely by increasing their city rate charges (with the City Council then making a direct operating costs grant to BAC) (Own Correspondent, 1999).

The main weakness of the Cape Town CBD CCTV system was the fact that it could only address a limited set of crime types ranging from car theft, muggings to pickpocketing. In other words confined to the so-called 'street crime'. More violent crimes such as murder robbery and rape usually occur indoors (unless of course these occurred in those streets having surveillance cameras installed). But it was hoped that, as it expanded, the Cape Town system would be able to assist in the identification of stolen cars or of getaway cars as criminals try to escape a crime scene (possibly of a crime committed indoors like a bank robbery) (Own Correspondent, 1999).

One of the operational imperatives for effective CBD CCTV, besides the obvious technical requirements of pan, tilt and zoom (PTZ capabilities by remote control) is the one of an unfettered view of street scenes. It is therefore always an important factor when siting the actual camera. Added to this placement is the need for a good deal of covert cover for the camera housing, i.e. it needs to be unobtrusive and not readily visible to the public otherwise its deterrence factor would be lessened due to its known and open placement. In other words a simple tall mast would in fact give its siting away. Poor siting in the Cape Town CBD camera system only became a serious issue after the murder of the owner of Keay's Jewellers in broad daylight (approximately 4 pm) in October 2004 (no useful video footage was available due to views being obstructed). In an investigation it was found that of the 76 CCTV cameras in the

[18] Ideally a CCTV camera system should allow for track and trace so that criminals can be tracked as they move away from a crime scene – the concept of seamless operations. There is little point in observing a crime if the perpetrators can escape arrest by slipping out of frame before the police arrive.

central CBD, 27 had their field of view obscured (either totally or partially) by shop signboards, advertising billboards, traffic lights or overgrown trees (Weaver, 2004).

With the initial Central Cape Town CBD experiment proving extremely successful soon led to the installation of more cameras in other crime spots around the city. These expansions became part of the Central City Improvement District (CID) project and were funded both by local businesses and the new Cape Town Unicity Metro Council.[19] In the Council's 2000/1 budget an additional amount of R16 million was allocated for the operating and extending (in partnership with BAC) the CCTV surveillance system in business districts across the metropolitan area (Own Correspondent, 2000b). By the end of March 2004 there were already 166 cameras in operation in Cape Town CBDs (I-Net Bridge, 2004).

The roll-out campaign extending the CCTV operations of the city to include areas outside of the CBD was launched by the Cape Town Unicity Metro Council and the Western Cape provincial Department of Community Safety in December 2001.[20] These operations were largely joint operations between the provincial traffic, Cape Town Traffic Department and the Cape Town Unicity's Law Enforcement Department (Cape Town Metro Police). The roll out of these additional CCTVs was backed up by the deployment of 340 municipal police officers who undertook special targeted operations concentrating on crackdowns on drunken driving, speeding, jumping red robots, and drivers using their cellphones without the appropriate hands-free equipment (Smith, 2001).

At the beginning of April 2005, in recognition of the technological advances and in a bid to keep pace with modernisation the Seapoint area (a preferred night destination spot for foreign tourists) received 12 wireless cameras worth R3 million in an upgrade of its surveillance system – these were the first of their kind in South Africa operating via digital signals (unlike the older analog fixed line CCTV cameras in the city centre.) A further boost to their effectiveness being that they could capture criminal incidents no matter what the weather conditions. Like the previous system they were linked to the Strategic Surveillance Unit (SSU) in the city centre hub control room comprising of 16 core members of the Metro City Police. The SSU members were able (via wireless digital signal) control the cameras remotely and watch out for criminal activities and get response units, situated within minutes of the camera posts, out to apprehend the law-breakers. Once again the emphasis in the Seapoint CBD was on the safety and security of tourists.[21] (Johannes, 2005).

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[19] The metropolitan area of greater Cape Town resulting from the amalgamation after the November 2000 local government elections of the municipalities and councils (Simonstown/Fishhoek/Muizenberg, Houtbay; Seapoint/Camps Bay/Clifton, Durbanville/Bellville; Milnerton/Tableview; Somerset West/Strand/Gordons Bay; Langa/Guguletu/Kayelitsha) making up the area.

[20] The N1 Highway between Goodwood and Durbanville suburbs and Vanguard Drive in the Mannenberg/ Athlone area (Smith, 2001).

[21] At the public unveiling of the 12 new wireless cameras on 5 April 2005 the Western Cape Provincial Police Commissioner Sitonga, had clearly stated that " …because Seapoint is quite a large CBD and has a high presence of tourists around…. Something needed to be done. The Atlantic seaboard is an integral part of the Western Cape's tourist attraction…. How can we be… a world-class destination if we don't have adequate safety and security measures in place?" (Johannes, 2005).

2. Johannesburg

Unfortunately the city centre of Johannesburg and in particular the precincts of Newton / Hillbrow / Braamfontein, had over the years built up (and it must be said) a deserved reputation for being crime ridden and extremely unsafe. The persistent public image of the area was strongly that of being derelict, dysfunctional and having a crime problem. Typical inner city decay conditions with its associated (see Leggett, 2002 & 2003) overcrowding of residential buildings, increase in crime, especially street crime, drug dealing and vehicle hijacking, was experienced in these areas during the mid-1990s. This situation was also accompanied by considerable demographic change in the post-1994 era, namely large numbers of foreign migrants (some of them undocumented and irregular immigrants) moved into the area. The Hillbrow Police Station precinct area was identified as one of the 140 odd (out of approximately 1 200) problem ('hot spot') or priority crime police stations in South Africa. Warnings to tourists to avoid the area in particular during night-time were routinely issued by embassies and consular services. The perception was that it was a 'dangerous' place populated by a high number of criminals who plied their profession with a good deal of impunity. With this background the installation of public (open street) crime control CCTV surveillance system in the area became a high priority.

Accordingly when the CBD CCTV project for Johannesburg city centre was first mooted it was strongly linked to the Safety Lung Project of the Gauteng Department for Community Safety and the City Council's Safer Cities Programme. In addition, strong motivation for the installation of public crime control CCTV were made as being one of the essential pillars of the new 'urban renewal' or 'developmental rejuvenation' strategies for the city's central business district. It was reasoned that if the CCTV project could reduce all crime levels and positively change the perceptions about public safety then businesses and people would be encouraged to relocate back to the city centre. In this manner the new CCTV project became a part of the new rejuvenation project within the overall City Improvement District (CID) strategy (to curb urban decay) of the Johannesburg Development Agency whereby R600 million was planned to be invested in the Johannesburg CBD area over a period of five years (Fielding, 2003).[22]

[22] This investment had a number of priorities (a five-pillar plan). Working on the assumption that any urban renewal project had to have in place not just business opportunities but also social and cultural amenities state investment aimed at creating firstly, a cultural hub with museums and theatre facilities (the Newtown Precinct development and the Constitutional Hill area); secondly the development of social amenities concentrating on new commercial housing, retail developments, hotels, restaurants and recreation facilities, coupled with the museums, archives and libraries – all to significantly add to catering for the needs of tourists, business and residents who would come back to the area. This rejuvenation project was coupled to the emergence of a Fashion District (to the east of the city centre); the transformation of the Ellis Park area into a major sporting centre and the redevelopment of the Faraday, Westgate Station and Park Central taxi ranks. In addition a number of greening projects and refurbishment of local schools were also to be implemented. Furthermore, to encourage this rejuvenation the Government offered substantial tax benefits to companies that agreed to relocate to the Johannesburg city centre while also concentrating on upgrading infrastructure (like the new Nelson Mandela bridge) while the provincial government planned to establish a provincial government precinct in the heart of the city. The rejuvenation plan was styled on New York's Manhattan with the vision of Central Johannesburg becoming not only the premier business hub (for the city, the province, South Africa and Africa as a whole) but also having functioning residential neighbourhoods (some developers had already bought up old buildings and proceeded to turn them into New York-style loft apartments) (Fielding, 2003; Own Correspondent, 2004a.).

Although a tender to manage and implement the Central Johannesburg CCTV system was awarded in mid-1997 to Kate Screech, an engineer from the UK, actual installation only occurred in April 2000[23] when a fifteen camera pilot system in the Johannesburg CBD was commissioned (the area bounded by Jeppe, North, Harrison and Claim streets). This CBD CCTV project for the Johannesburg city centre was still part of the Safety Lung Project of the Gauteng Department for Community Safety and the City Council's Safer Cities Programme. The initial plans called for a division of the Johannesburg CBD into 14 sectors, each sector having 20 cameras. It was expected that more than 200 cameras would be installed in the CBD at an estimated cost of R3 million (Own Correspondent, 1997).

In the 1999/2000 budget year the Gauteng Department for Community Safety committed a sum of R2,5 million to the CCTV project. The project as a whole was a partnership with BAC(SA), the Johannesburg Metropolitan Council (JMC) and the SAPS – each with a specific planning and practical role to play. The Gauteng Department of Community Safety provided the crime prevention policy framework; the JMC the municipal urban renewal framework (inclusive of municipal police personnel); BAC(SA) the business and operating framework (which included technical specifications and initial start-up installation funding, plus the soliciting of contributions from CBD businesses for operational and equipment costs for sustainable long-term success); the SAPS the policing framework (reaction and response personnel within their policing framework of visible and sector policing). In order to manage funds and resources for the project the partners agreed on the establishment of a Section 21company[24] known as the Johannesburg Crime Watch (Own Correspondent, 2000a).

The BAC(SA) designed and implemented public CCTV crime control system was strongly based on the system as installed by the BAC(WC) in Cape Town in 1998. The Johannesburg system together with the Cape Town system (the latter providing the specification, operating and implementation framework plan) soon achieved international "best practice" status and was the first such system in the world to be awarded (in 2004) ISO9001:2000 certification for being compliant in their key areas of competencies.[25] The system established national benchmark standards[26] for the implementation of similar systems (BAC(SA) were subsequently also asked, among other commercial projects, to design and implement the Pretoria (Tshwane) CBD

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[23] The delays were largely due to budgetary problems. In their 1997/98 budget the provincial Department of Safety & Security had allocated an amount of R1,3 million and the SAPS promised an additional amount of R2,2 million for the CCTV project which would initially be developed as part of the Department's own Safety Lung Project for central Johannesburg and overlapping with the Johannesburg City Council's Safer Cities Programme. While the necessary Treasury approval was obtained for the transfer of these amounts to pay for the installation and management of the CBD CCTV system this only occurred in the 1999/2000 financial year (Own Correspondent, 1998).

[24] A 'not-for-profit' company registered with the Companies Registrar

[25] These were for Design; Implementation; Operations & Management ofa surveillance technology system); Incident Management; and Maintenance (Strauch, 2006).

[26] It was also the only system of its type ranked (in 2004) among South Africa's Technology Top 100 companies list. Moreover, the whole system had been South African Bureau of Standards (SABS) approved as well as recognised by the International Inventors Institute (Sweden) for the innovation of its design (Boyd, 2004). In 2005 received the Top Technology Company in South Africa award for the best utilisation of technology (Strauch, 2006).

system) and on this basis, at the end of 2002, the BAC(SA) Surveillance Technology Unit turned themselves into a commercial company, Cueincident,[27] to market the BAC CCTV surveillance model not only for domestic consumption but also for export to international markets (Own Correspondent, 2001; Boyd, 2004).

The BAC(SA) CCTV system was wholly South African designed with much of the components sourced and manufactured in South Africa. With the apparent success of the pilot the whole Johannesburg CBD CCTV surveillance system was subsequently expanded considerably to cover most of the CBD of Johannesburg (Newtown and Braamfontein precincts) and other adjacent areas. By mid-2004 the City Improvement District strategy (whereby in conjunction with the CCTV system and the visible patrols of the Johannesburg Metropolitan Police Department (JMPD) property owners take charge of their own security and cleaning[28]) had been set up in 67 blocks of the central city CBD of the Newtown, Braamfontein and Hillbrow areas with 200 cameras in place (Own Correspondent, 2004b). These cameras are linked to the central (in the Carlton Centre) BAC(SA) controlled monitoring room to which the SAPS and JMPD have access.[29]

In August 2004 the Gauteng Provincial Government also announced plans for a network of 3 500 cameras to cover all major freeways (traffic control) and tourism areas (crime protection) and the Johannesburg International Airport.

In the BAC(SA) administered Johannesburg control room a system has been developed whereby the CCTV operators[30] are trained in risk profiling, non-verbal communication (as exhibited by the public under surveillance by the CCTVs), surveillance techniques and incident management – all supervised by an incident manager (Rogers, 2005; Strauch, 2006). The training provided by BAC(SA)/Cueincident enabling the operators to identify areas and individuals that pose a risk to the public and businesses in the CBD so that the risks may then be eliminated or managed more efficiently (Boyd, 2004). Its cameras could "zoom in on incidents and respond as [the] operators analyse, predict and react in real-time situations" (Boyd, 2004).

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[27] Operations as a commercial company were formally started as from 1 January 2003 (Boyd, 2004).

[28] In June 2005 the Property Owners and Managers Association (POMA) (consisting of landlords and managing agents) of the Johannesburg inner-city area spearheaded an initiative linked to the City Improvement District concept namely a Residential Improvement District whereby POMA would concentrate on upgrading and revamping designated residential areas within the inner city areas where POMA has control of the majority of buildings. This would focus on the "serious hot spot" areas by forming a team for each area which would include landlords, tenants, the city council, city utility departments, the JMPD and SAPS. The teams would put in CCTV cameras in the buildings, electronic access control as well as security on the street. While each building would administer and monitor their own surveillance equipment they would be linked to the BAC operated public CCTV system control room in the Carlton Centre. It was further hoped that by linking these security improvements to upgrading cleaning services and refurbishments of blocks of POMA controlled flats and interlinking them these initiatives would encourage financial institutions to be prepared to finance further developments in the residential inner-city property market (Own Correspondent, 2005).

[29] One officer from each sat at the main console (incident developing desk) and are in constant radio contact with the patrol cars.

[30] Paid for and trained by the commercial company (Cueincident) set up by BAC(SA) to install and finance the CCTV systems operated by them.

As Vusi Twala, CEO of Cueincident, stated "we can follow criminals around from place to place until they stop. If they enter buildings, the police move in." (Cox, 2006). Furthermore, Cueincident also claim that since its installation the Johannesburg system has led to hundreds of successful arrests as a result of video footage which has been presented in court as evidence (Cox, 2006; Strauch, 2006).

In the Johannesburg monitoring room three teams manage each of the consoles comprising of 16 cameras. Team members alternate duties and rest periods on an hourly basis to ensure that they maintain high levels of concentration. Besides all the individual monitors, there is one big screen on which an individual monitor picture can be shown. The 'second-by-second' application of the 'track-and-trace' capability was claimed to be a world first for the BAC system (Boyd, 2004).

Furthermore, in the BAC(SA) Johannesburg Control Room in the Carlton Centre there is one police officer from the SAPS (assigned by the local police station) and one from the Johannesburg Metro Police, both on duty with a three eight-hour shift rotation of different officers. The BAC-developed system was rather unique (for South Africa) in that it was operator driven with its camera network (based on fibre optic cable infrastructure) being able to 'patrol' the environs of the central Johannesburg CBD.[31] In addition, the area covered by the CCTVs has two dedicated police vehicles (one each from SAPS and JMPD) assigned to it. If any incident is observed in the making by the CCTV operators (spotters) either police officers on duty in the control room can radio the particular agency patrol vehicle immediately and dispatch it to the potential crime scene or municipal bye-law infringement.[32] Accordingly the BAC(SA) system allows for immediate ordering of a reaction and there is no communication problem or time delay in responding (Mawson, 2004; Rogers, 2005; and Strauch, 2006). This system was made more effective when February 2006 legal agreement was reached between the two policing agencies (SAPS and JMPD) for an officer from each to share i.e. sit in both patrol vehicles. This in effect was a multiplier effect since either patrol car could now respond either to a SAPS crime matter or a municipal by-law infringement without only having to instruct one or the other to respond to what type of infringement the particular incident might turn out to be (Strauch, 2006). In essence then, having the cameras in place allows both the SAPS and the JMPD to better utilise their resources since the CCTV system has "become their eyes" [on the streets] (Cox, 2006). This system of crime and incident surveillance has additional back-up (for the response teams of the JMPD and SAPS) and 'eyes' to the operators in the control room with the deployment of Johannesburg Metro Council employed security guards placed on most street corners in the CBD area. These municipal guards are linked to the control room by means of two-way radio communication (Strauch, 2006).

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[31] Most of the then other CCTV CBD surveillance systems in city CBDs elsewhere in South Africa– due to funding constraints – were not following the BAC partnership policing route with the SAPS but merely had a central control room with one or two operators and having a video recording capability, and unless an actual incident was picked up from one of the multiple screens in actual commission no response would be dispatched and the recorded incident would then only be used at a later stage as evidence.

[32] In February 2006 agreement was reached between these two policing agencies for an officer from each to share i.e. sit in both patrol vehicles. This in effect was a multiplier effect since either patrol car could now respond either to a SAPS crime matter or a municipal by-law infringement without only having to instruct one or the other to respond to what type of infringement the particular incident might turn out to be.

In 2005 Cuincident started modernising and updating their network by installing wireless capability as an alternative to the optic fibre infrastructure. Technical trials were held using Code Division Multiple Access (CDMA).[33] The CDMA system offered many advantages over the optic fibre infrastructure, in particular connectivity in an area. In other words fewer base stations are needed to cover a large area and it is therefore cheaper in relation to the more expensive cable. The cable was also more vulnerable. Moreover, CDMA did not require each user to be linked to a cable. Furthermore, a camera could be monitored, for instance, remotely by means of a simple cellphone (as opposed to a big central control room) (Balancing Act, 2005). One practical advantage of using a wireless system being that a colour image of a suspect could be downloaded from a CCTV camera and transmitted almost instantaneously to the cellphones of responding officers (or any other community guards of participating security companies in the CBD so that they can identify any suspect or keep a watch on the streets in an effort to apprehend such suspects) (Robertson, 2005).

3. Pretoria (Tshwane)

While a CCTV surveillance system had been in the planning for many years it in fact took a number of years before the installation of a Metro Council funded project actually occurred. The system was put out on tender as early as 2000 but various delays had occurred.[34] As a result of the evident success of the BAC/Cueincident system in the Johannesburg CBD the Tshwane[35] Metro Council had awarded the tender to plan, operate and manage the Tshwane CBD system to Cueincident in early 2004. This system was eventually formally launched on 21 December 2004. The system consisted of 16 cameras located within the CBD. By June 2005 there were 34 cameras operational in the Tshwane CBD with a planned roll-out of 230 cameras. Although being delayed for some time the Tshwane system had the advantage of being the most modern of all South African systems consisting of a hi-tech digital surveillance system[36] (Hlahla, 2005a;

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[33] CDMA is a digital wireless technology that uses spread spectrum techniques. Unlike competing systems, such as GSM, CDMA does not assign a specific frequency channel or time slot to each user but instead individual conversations are encoded with psuedo-random digital sequence. By assigning unique codes to each communication to differentiate it from others in the same spectrum, CDMA allows users to occupy the same space time and frequency allocations in a given ban/space. Therefore, in a world of finite resources, CDMA enables many more people to share the airwaves simultaneously than do alternative technologies (Balancing Act, 2005).

[34] One of the delays had been a legal objection and declaration of a dispute between a Pretoria businessman, Nazeer Noormohamed, who had objected to the tendering process arguing in the Pretoria High Court that the incorrect tendering process had been followed when the contract had been awarded to Sensormatic SA. In 2004 the project was again put out on tender whereafter it was awarded to the Cueincident Morubisi Operating Company – a joint venture between Cueincident and the black empowerment company Morubisi Pty Ltd (Hlahla, 2005a).

[35] Comprising of the former municipal councils of Pretoria, Centurion and Akasia.

[36] The Tshwane CBD CCTV surveillance system made use of a number of specialised hi-tech systems. One of them was the American Power Conversion (APC) InfraStruXure sytem. InfraStruXure is an on-demand architecture for network critical physical infrastructure (NCPI). The InfraStruXure design integrates power, cooling, rack, management and services, which allows for the selection of standardised components to create a solution through modular and mobile configurations. This standardisation enables the InfraStruXure design to easily meet any changing future needs and expansions. This also allows for meeting any challenges caused by power failures or IT failure as well as safeguarding information security in order to minimise any lost production or damage to reputation that any of these failures could cause (IT Web/SAfm, 2005).

ITWeb/SAfm, 2005). At the end of July 2005 the Tshwane Metro Council became the first in South Africa to use its sophisticated CBD camera surveillance system to identify traffic violators and to issue spot fines to offenders.[37] By doing this it became the only electronic CBD facilities management surveillance system in South Africa having the legal authority (via Council by-laws) to ensure prosecution of city traffic infringements on video evidence alone.[38] According to the Tshwane Metro Council this use of the system was "aimed at making Tshwane's streets safer and [traffic control] more efficient" (Hlahla, 2005b). Like the Johannesburg CBD system it allowed for the Metro Police to make more rapid responses to incidents and emergencies.

The CCTV cameras in the Tshwane CCTV Control Room are manned by Cueincident operatives, and like the Johannesburg Control Room have both Tshwane Metro Police and SAPS officers 'on call' in the control room. The operational response team includes a bicycle squad with four members, three motorcycle officers, six members on foot patrol at certain points in the CBD and three vehicle patrol units with six members each. In addition, the Tshwane Metro Police based their surveillance practices on a system of identifying 'trouble spots' in and around the CBD in order that more focused periodic special operations could be implemented (Hlahla, 2005a).

4. Durban (eThekweni)

In July 1995 the Durban City Council had launched plans for the installation of 40 cameras in the central business district (CBD). The primary aim of this system being the monitoring and controlling of traffic flow only with an additional 12 cameras to be installed by them along the Durban beachfront for the purpose of tourist protection and crime control (Glanz & Nacerodien, 1996: 1). However, with the changes in local government structures (amalgamation of municipal councils in the Durban area into the eThekweni Metro Council) the initial planned crime control cameras were not installed until the whole project was relaunched as the renamed CCTV project known as "Eye-in-the-sky". This was a joint project between the Durban Metro Police,[39] SAPS and the local KwaZulu-Natal (KZN) branch of BAC(SA) with funding by the eThekweni Metro Council. A pilot project was first operationally commissioned in 1998 consisting of an initial 15 cameras along the beachfront, which were later expanded to 23 in the central Durban CBD and 15 around the International Convention Centre. The core of the Durban surveillance project was the beachfront area where (like the Johannesburg and Tshwane projects) 'hotspots' of criminal activity were identified for specific surveillance. With the recognition of the importance of tourism to the economy of Durban, the security provided by the beachfront camera project became key to establishing the area as an "upmarket, world-class [tourist] destination" (Cole, 2005).

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[37] The first spot fines – for parking illegally on street corners – were issued on 28 July 2005. The authorities intended to concentrate on such traffic violations as double parking, drivers who unload goods while parked in the middle of the road, and dangerous parking (on sidewalks and blocking exits and entrances etc.) (Hlahla, 2005b).

[38] As with highway camera speed traps a motorist would only know if they had been caught when the traffic fine notice arrived in the post.

[39] Durban Metro Police was for a long time the only municipal city police force in South Africa (established as the Durban Police in 1854) operating outside of the mandate of the national South African Police Service (SAPS) (up to 1994 the South African Police (SAP).

By the end of 2000 the central Durban CCTV surveillance system had 67 cameras installed, but like a number of CCTV surveillance systems in South African CBDs the system as a whole tended to suffer from managerial and operational inertia – once the equipment was installed it seemed that, due to funding constraints, the system was operated on a shoestring budget with minimal operators, often only at peak hour times. In other words there were not sufficient operators to monitor all cameras whose input was merely recorded and archived, i.e. no 'live' monitoring and surveillance occurred so that instantaneous response/reaction could be despatched as incidents occurred. Council officials and both the SAPS and Metro Police in Durban were well aware of these shortcomings and periodically 'revamped' and 'relaunched' a 'new crime prevention strategy', integral to which was usually the upgrading, expansion and/or modernising of the existing CCTV surveillance system. In November 2000 as part of Durban's Safer City Project[40] an amount of R2,5 million was budgeted for not only the upgrading and improving of the 'eye-in-the-sky' system in Central Durban but for the first time to also spend some money on monitoring training for operators. Furthermore, underpinning this upgrade would be using research to identify those sites (for camera installation) that had serious crime problems (Harper, 2000).

While more cameras were installed by the end of August 2003 it was again being reported that Durban's "crime-busting closed-circuit TV cameras" were not operational or broken. Councillor Peter Corbett of the Democratic Alliance reported that on any one given day only 60 of the 90 cameras installed were working and along the beachfront the situation was even worse were only one in twelve was operational. The situation in the control room had not improved either where there was only one operator to monitor more than ten cameras simultaneously. Furthermore, the footage was not being recorded – and therefore all monitoring was basically useless. The Metro Council called in "international experts" to undertake an investigation into upgrading. Eventually a sum of R6,5 million was set aside for a further 'upgrade' of the system and with an additional R8 million to be used later for more upgrades and modernisation of the system (Mbanjwa, 2003).

With this aim in mind this sum of R8 million was utilised at the beginning of 2005 when the beachfront part of the project was expanded and modernised[41] with the installation of 40 hi-tech digital cameras providing a blanket coverage on a 24-hour seven-days-a-week basis via a central control room (with all recordings of monitoring operations being 'backed-up' (archived) and physically stored. The modernised system is all digital (including back-ups). If the picture from one camera begins to get 'blurry' the operator in the control room is able to switch the monitoring to a neighbouring camera. There is also a microphone in the control room so that when video recordings are played back, whatever the controllers were saying at the time can

[40] The project revolved around three concepts – effective policing; targeted social crime prevention; and environmental design – and was to operate from the premise that reactive policing can only stop crime in conjunction with longer-term social interventions and removing the environment (opportunity) in which crime takes place (Harper, 2000).

[41] The new modernised system was designed by Rob Anderson & Associates of Durban and installed by Integrated Management Solutions also of Durban (Cole, 2005). BAC(SA)(KZN) had withdrawn as an entity from the running of the project. However, the project remains a private/public partnership one involving the major stakeholders, namely: the Durban Waterfront Management Association, the eThekweni City Council, the Durban Metro Police and the SAPS.

also be heard. The control room of the Durban CBD surveillance system was manned (in 2005) entirely by a private security company[42] who in turn also despatch their own armed reaction officers if anything suspicious is picked up on the monitors. The Durban City Police have their own patrols along the beachfront and in the CBD. The security company is in constant contact with them as well as the SAPS, which adds further backup to the primary reaction of the armed response unit (Cole, 2005).

In August 2005, as part of this major revamp, the Durban CCTV surveillance system was given a further boost when a new Metro Police Control Room, linked to all 150 of the newly upgraded and installed digitally operated cameras, was opened[43]. In addition, personnel manning the cameras were increased from two to a minimum of 16 per shift, 24 hours a day. According to Sgt Ricky Subramoney, who was in charge of the Metro Police CCTV Control Room, the cameras had been "highly effective in crime prevention" with the control room monitoring criminal activity and in constant contact with Metro Police response teams. Furthermore, that the "information [obtained by the cameras] …will be used in a multi-disciplinary way and will hopefully allow us [Durban City Council] to better manage the city in the interests of its residents and visitors" (Gounden, 2005). Here too, like the Johannesburg experience, the new system was being utilised for management aims other than solely for crime prevention and crime reduction. The Durban experience also pointed to the crucial operating principle that all aspects of a system needed to be annually funded or re-funded, namely expenditure did not stop with only equipment installation costs but also had to be extended to the required continuous upgrading, modernising and maintenance, daily operational expenses and training of operators. If any of these aspects of a CCTV surveillance system are not funded or underfunded, the effectiveness of the whole system breaks down or is negatively affected in the long-term.

In the interests of more effective operational management the control of the CCTV operation was moved at the beginning of 2006 from the Metro Police to Durban's Emergency Services with a planned increase in the number of cameras to 220. All footage was now being taped and used for crime mapping and analyses, as well as for identifying crime 'hot spots' in and around the city. In addition, because of the agreement between the SAPS and Metro Police, the control room had access to both Metro and SAPS radio channels and were in constant contact with both SAPS and Metro Police (Meyer, 2006).

According to the Safer Cities Project facilitator and new manager of the revamped Durban CCTV surveillance centre, Cynthia Ramchander, although their "primary function is crime prevention", the system was now "more than just a crime-control measure" but "also a management tool for the city" geared to pick up water faults, broken traffic lights, illegal

[42] A company called Enforce (Cole, 2005).

[43] The revamped system incorporated the latest technology available and accommodated all of the latest operational features available not only in South Africa but also internationally (used by major policing agencies worldwide) with all revamped cameras having their observation ability after sunset improved by being equipped with infra-red or night vision capabilities. The CCTV cameras were installed at a cost of R180 000 (approx. US$30 000) for each camera site. New cameras had been placed along the M25 and N2 highways near the Gateway Shopping complex, as well as at high crime zones at the beachfront at new sites on the Argyle and Stanger street intersection near the busy Suncoast Casino (where criminal activity had been reported) (Gounden, 2005).

electricity connections and motor accidents (or other emergency disasters such as fires and floods). The Durban CCTV surveillance centre was operationally also backed up by a fully professional training programme (based on the Cueincident developed one) aimed at imparting observation skills to pick up suspicious behaviour as well as processing (analysing) that information (Meyer, 2006). The Durban system appeared to be on the way to a comprehensive surveillance system with multiple management uses. After four months of operations a spokesperson for Metro Police, Alex Wright, was very positive about the important role the system played as far as crime was concerned with the cameras "not only helping to catch culprits, but in deterring them as well" (Zulu, 2006).

Perceived impact on crime reduction

The BAC(SA) CCTV systems have appeared to have lead to a considerable reduction in reported crime in the CBDs where they have been installed. In the Cape Town case study the system not only replaced the use of 450 police officers patrolling the CBD with 25 police officers on three eight-hour shifts (a considerable saving in manpower and costs) but in the first year of operation of the full 75 camera system led to a reduction of 38% in reported crime from the area (only the central CBD) with a predicted reduction of 80% by the end of the second year (Penberthy, 2001: 7). However, in May 2000 it was reported in the annual Cape Town Unicity budget report that the existing system in the Central CBD had led to an 11% reduction in crime[44] and a 200% increase in apprehensions (arrests) (Own Correspondent, 2000b).

In October 2000 the Gauteng premier, Mbhazima Shilowa, reported in the provincial legislature that the use of the pilot CCTV surveillance system in the Johannesburg CBD in its first four months of operation (April-July 2000) had resulted in the detection of an average of 40 criminal activities a month, with 70% of them resulting in criminal prosecution. This apparent success led to the project partners working on a plan to install more cameras by the end of the year (Own Correspondent, 2000c). In the first year of its operation the Johannesburg CBD CCTV system had reported a 90% drop in muggings in the area while all reported crime decreased by 48%.[45] By mid-2004 not only the CCTV but also the rejuvenation plans were reported to be showing 'substantial progress' in 'turning around the troubled central business district'. In April 2004 the City Manager, Pascal Moloi, reported that the crime rate was down, occupancy rates were up, new businesses were being opened in the area and investor confidence was growing. In short, according to Moloi, "the Johannesburg CBD is alive and vibrant" (Own Correspondent, 2004b).

[44] The apparent discrepancy was explained in that the BAC reported reduction of 38% was for the period 1 December 1998 (when the initial pilot was installed) to 31 December 1999 (which incorporates the two high street crime festive season months of December) while the Council's reported 11% reduction was for the financial year of 1 April to 31 March – which excludes one of the December months of the BAC reporting period.

[45] With the installation of a projected additional 240 cameras the JMPD hoped to "reduce crime by 25% [over a five year period] and bylaw infringements by 45%" (Own Correspondent, 2004b).

By the end of 2001, when 200 cameras had been set up around the whole Johannesburg Central CBD Cueincident (BAC(SA) Surveillance Technology commercial unit) reported that they had helped to "bring crime down by 80% in the Johannesburg CBD" (Balancing Act, 2005). Furthermore, the ancillary claimed impact of this reduction being that "insurance premiums for businesses are falling, quality CBD properties rentals are firming and businesses are returning to the city centre" (Balancing Act, 2005). Besides the Central CBD Cueincident was contracted to install surveillance cameras at Spoornet's[46] City Deep inland container port[47] south of Johannesburg CBD. City Deep used to suffer massive theft before Spoornet contracted Cueincident to erect surveillance cameras at City Deep.[48] This installation reduced theft shrinkage at this rail depot by 95% (Mawson, 2004; Balancing Act, 2005). Another commercial application was the CCTV installation in all of First National Bank's Johannesburg inner city branches. In the 12 months preceding the CCTV installation there were nine bank robberies at these branches resulting in millions of Rands being stolen. In the following twelve months there occurred only one robbery in which the perpetrators were later arrested and the money recovered. Four of the five robbers were caught and prosecuted due to the evidence (full colour mugshots) provided by the Cuincident camera video recordings) (Balancing Act, 2005).

By the end of January 2003 the Johannesburg CCTV CBD surveillance system (then with a total of 184 installed cameras) was purported to have had a significant impact on crime with the reported figure for all crime in the Johannesburg CBD having "dropped by…. 80%. Serious and violent crime …down by 75%, non-serious crime by 90%… and the city's facilities management capability … up by 100 percent." (Cox, 2003)"

In January 2006 Cueincident claimed that there had not been a successful bank robbery in Johannesburg's inner city since 2002,[49] when the full footprint of 178 CCTV cameras had been installed. Furthermore, it was stated that during that period a total of five bank robberies have in fact been foiled, the most recent one in September 2005[50] (Cox, 2006).

In Pretoria/Tshwane CBD the system launched in December 2004 appeared to generate almost immediate success in the CBD with 50 arrests occurring between 21 December 2004 and 4 January 2005 – all attributed to the new cameras. In addition, the Tshwane Metro Police recovered two stolen vehicles and attended to 236 incidents and traffic offenses during the same

46 The parastatal controlling South Africa's railways.

47 City Deep is an inland rail port – i.e. cargo and containers are railed to and from City Deep to such harbour seaports as Durban and Maputo for further distribution to clients (importers and exporters) - handling approximately 85% of South Africa's imports.

48 The cameras sweep the entire City Deep storage area every 15 minutes – the equivalent of a full day on foot patrol. Should the cameras pick up any strange behaviour, lax workers, or goods stowed away in trees or behind other structures, Spoornet Security are notified and can respond immediately (Mawson, 2004).

49 Prior to 2002, on average about nine bank robberies a year had occurred in the inner city of Johannesburg (Cox 2006).

50 The camera operators at the Carlton Centre control centre had picked up five suspicious-looking characters and alerted the police. The police arrived within 60 seconds, and arrested one suspect in the bank and the others in a waiting car, in which several unlicensed guns were found (Cox, 2006).

period. While most of these arrests were for minor offenses[51] it was felt by the authorities that "the cameras are having a positive effect on preventing crime in the city," (Hlahla, 2005a) and according to the Tshwane Metro Police the CCTV system in the Pretoria/Tshwane CBD had "gone a long way in assisting them in apprehending criminals." (Hlahla, 2005a).

The reduction in crime continued and in its first six months of operation (21 December 2004 to 1 June 2005) an approximate 30% month-on-month decline of street crime was reported and in June 2005 Cueincident maintained that overall street crime in the city centre had dropped by "more than 80%" while there had been an "almost 100% decline in bank robberies" (IT Web/SAFM, 2005).

Similar reductions in crime were reported after the Durban beachfront surveillance system was expanded and modernised at the beginning of 2005 and the system (together with "concerted private and public policing") was credited with having "brought crime levels down by as much as 35%" in the waterfront area (Cole, 2005).

The above claimed reductions in overall CBD crime should not be accepted unconditionally and uncritically. Although in discussions with the CCTV operators and the operational manager of the Johannesburg and Tshwane systems, they remain adamant that the systems have undoubtedly reduced visible street crime and assisted in the reduction of certain violent crimes such as vehicle hijacking and bank robberies in the CBDs, particularly where the installation of the CBD CCTV surveillance systems have been accompanied by simultaneous target hardening and the linking (for example) of banking CCTV systems to the main control room.

However, the claimed reductions, for instance by Cueincident, are based on their own estimates when comparing incidents recorded since the system began operating in 2001. Unfortunately they are not based on any comprehensive or scientific analysis of existing reported crime statistics of the SAPS. Moreover, they are not based on such analysis as exactly where the crimes (street or which corner, building, alley etc.) were detected, what kind or type of crime was being reduced, a profile of the perpetrator or victim etc. Until such analysis is applied to these claimed reductions (and the archived recorded incidents are compared to reported SAPS crime statistics) we are unable to make any concrete conclusions regarding its impact on reducing crime or effect on urban renewal efficiencies. Furthermore, there has not been any comparison made to adjacent district crime rates which begs the question of whether the specific crime reductions were not merely displacement to elsewhere i.e. to areas where cameras are not installed or such crimes as drug dealing have not simply been driven indoors (diffusion of crime).[52]

As Ted Legget has stated:

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[51] Among the offences seen on camera in the first month of operation were public drunkenness, drug possession and the illegal pointing of a firearm (Hlahla, 2005a).

[52] For any such definitive conclusions to be made a more comprehensive comparative study of all available data and crime statistics will have to be undertaken, particularly GIS and spatial crime mapping of long term crime trends.

> There are reasons to be sceptical of the crime preventative effect of CCTV, however. In the inner city context [of Johannesburg] in particular, preventing crime through street surveillance would be limited in its potential, as most of the population at any given time is situated vertically, in high rise apartment and office blocks.
>
> (Leggett, 2003: 21-22).

Legget also questions the effectiveness of the camera street coverage in particular in Johannesburg where:

> Many of these buildings have concrete overhangs that shield the sidewalk from view. Hawkers use umbrellas to shade their stands and trees shade many areas. Coverage is therefore incomplete, and it would not be difficult for habitual criminals to adjust their behaviour accordingly (Leggett, 2003: 22).

But irrespective of Legget's view (and criticism in terms of crime statistics) (as quoted previously above) the South African CCTV CBD systems, while being apparently technically advanced, and the initial motivations for their installation referred specifically to the reduction of street crime, soon became enmeshed in other agendas, namely attracting business back to CBDs and making the area safer for residents within an overall urban renewal strategy. Other uses have turned on traffic control and more recently the ticketing of traffic violations (Tshwane CBD) as well as municipal assets and services management.

It would also appear that the operators of the CCTV systems in South African CBDs did not initially give much thought to issues of public privacy nor on issues of using video images for evidentiary purposes (although in the Johannesburg and Pretoria systems operated by Cueincident this has become a strong marketing initiative to encourage state prosecutors to make more use of the recorded video images of incidents for use in court). Finally, no attempt has been made by operators, metro city councils, provincial departments of community safety, metro police or SAPS to test (i.e. asked, approached, surveyed) public reaction to and perceptions of the installation of the public CCTV surveillance systems in the various CBDs around South Africa, let alone asking them whether they in fact wanted their installation at all.

In concluding then one can say that the four South African open street CCTV surveillance systems in CBDs reviewed in this article would appear to have a number of interesting innovations or best practices as pointers for operational implementation elsewhere in South Africa, namely the fact that they are technologically advanced systems (with the Johannesburg system being ISO 9001:2000 compliant.) making use of the latest available technology and equipment with constant renewal. In addition, the Cueincident operated control rooms (Cape Town (up to 2005), Johannesburg and Tshwane, as well as the initial operations of the Durban Control Room for the expansion project) all have central control rooms having 24/7 monitoring and surveillance and linked directly to police response teams (this monitoring and surveillance is backed up by a specialised training programme).[53] All of the four case studies described above resulted from private sector planning, installation and operating initiatives (and with BAC

[53] For more information on Cueincident's training programme see Minnaar, 2006b.

providing initial seed funding or start-up capital). Furthermore, all four case studies are substantial (by South African standards) operations having at least camera footprints of up to 200 cameras per operation. While there are no police-run, operated or administered systems per se in South Africa all of these operations have a crime reduction/prevention focus (essentially 'partnership policing') with the presence and rapid response/reaction by the police themselves in co-operation with the control room operators, and in certain circumstances the assistance of municipal private security guards. The whole of these systems are crucially dependent upon the effective rapid response times by means of patrol vehicles (backed up in Johannesburg with the council guards on corners in the CBD). Furthermore, the Cueincident system is also focused on maintaining the integrity of the video images (double recordings - some digital, frequent changing of tapes, and archiving)[54] so that they can be used as evidence in a court of law and assist prosecutors in obtaining successful prosecutions. The best run control rooms are further backed up by a comprehensive training programme for the operators, particularly in observation and monitoring skills. Finally, the South African systems were also designed with a commercial end in sight, i.e. to be self-funding to ensure long-term sustainability. For this purpose sponsorships were negotiated and levies (or rate increases) on businesses and companies in the CBDs were instituted in order to lessen the financial burden on city councils.

There are some downsides to the various systems described above. One being the uncritical acceptance by operators, businesses and municipal councils of the claimed substantial reductions in crime without taking into account the need to make scientific comparisons with existing SAPS crime statistics for each precinct in the CBD, or whether existing crime had not merely been either driven indoors or displaced to other adjacent districts or even to other nearby cities. In addition, the information systems emanating from the CCTV surveillance have, across the board, not been allowed to be integrated or linked to the official SAPS data systems (e.g. central criminal records system, reported crime statistics (CAS), or even the Stolen Vehicle Registry system). On a technical side the South African systems have also experienced, in the African context, particular problems with utilising Western-developed facial recognition programmes (Strauch, 2006).

Furthermore, in all instances the original motivation for implementation has subtly changed from purely a crime fighting technology to a multi-purpose urban management system – resulting in a truly 'big brother' system. This is of concern to many citizens who are wary of the increasing public intrusion of local government into their private lives. But these concerns appear to be swamped by an ever louder demand by neighbourhood watches, various residential citizen groupings (in the more affluent areas inclusive of private security villages) and even the Federation of Community Police Forums (CPFs) (driven through media reports, letters to newspapers, anti-crime marches and a national public letter campaign) for the implementation of additional CCTV surveillance systems – even right into the heart of residential suburbs. While CCTV surveillance systems in the larger South African CBDs appear to be here to stay, it remains to be seen at what level of sophistication (technological, operational and management) they will be implemented – particularly by the smaller less wealthy town and city councils – and

[54] For detail of their recording and protecting evidence system see Minnaar, 2006b.

whether such advanced systems will continue to make an impact on crime reduction levels as well as the provision of more effective municipal services.

Some concluding remarks

While the research study upon which this article is based would appear to be the first of its kind in South Africa and was done independently of any reference to or review of other similar international studies there are a surprising number of similarities (and differences) that emerge in comparison to various international studies. Furthermore aspects identified in the research have apparent great resonance with findings in some of these, notably those done in the UK reviewing implementation of CCTV in different locations.[55]

Like the UK in particular,[56] and to a lesser extent in the USA, there has been constant annual growth (from 2000 onwards in South Africa) in the use of CCTV to prevent crime in public spaces. While the South African study made a start on trying to make a preliminary evaluation of the impact of CCTV installation on crime in different CBDs only international studies have obviously thrown their evaluative nets much wider by making comparisons with a wider range of locations ranging from city/town centres, transport/rail systems and stations, soccer stadiums to shopping complexes and car parks etc. Some of the international studies only looked at crime statistics in terms of reduction while others examined such aspects of crime diffusion and/or displacement of crime outside of a surveillance area.[57] Other international studies have also touched on such aspects as system design, the motivation for implementation, and observation of control operator practices.[58] The South African study was able to make some new observations regarding South African practices. Interestingly the initial control room operator training programme was developed by a South African industrial psychologist[59] using observation and psychological theories but which training soon developed some innovative practices adapted specifically to South African conditions.

Many of the themes emanating from the international studies have been touched upon in the South African study but all need additional in-depth follow-up research. But in looking at some of these international studies what comes across (as a first impression) is that many of the

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55 See the series of UK reports, namely: Gill & Spriggs, 2005; Gill et al. 2005a, 2005b & 2005c.

56 See McCahill & Norris, 2002 (for UK growth comparisons) and Nieto, 1997 (for the growth in US).

57 It is not the intention here to make extensive reference to other international studies but merely to note some of these studies that are of relevance in terms of findings with this current South African study. For example, Skinns, 1998; Norris & Armstrong, 1999; Armitage, 2002; Welsh & Farrington, 2003; and Wells, Allard & Wilson, 2006.

58 A good detailed study on the latter aspect is that of Gill et all, 2005d.

59 Dr Craig Donald, a South African 'Human Factors Specialist', is an industrial psychologist and Director with Leaderware and Advanced Development Applications, companies that have a specialist involvement in the security industry and CCTV. He has consulted internationally on the human factors in CCTV management and operations, selection and assessment techniques, and training and performance management. In the late 1990s and early 2000s he was extensively involved in the design of selection instruments used in the selection of aviation screeners and CCTV operators both in South Africa, the UK and elsewhere, and is a leading specialist in the use and training of body language for CCTV surveillance.

impact/evaluative studies have been done from an often purely academic point of view of social scientists (largely sociologists or psychologists or communication specialist researchers) and very few as out-and-out crime researchers (criminologists) let alone private security practitioners who have practical knowledge of the implementation (siting) and impact evaluation in terms of (crime and asset loss) risk analysis based on practical security principles (such persons in the academic world are few and far between).[60]

One aspect that has been covered in the international studies on CCTV that was not touched upon in the South African study is that of the attitude of police officers towards the presence of CCTV and the impact this might have on their policing behaviour.[61] However, some preliminary South African surveys in CBDs (as part of the larger thirteen metropolitan research project on CCTV) on public perceptions[62] and views on implementation were recently carried out by the South African research team.

While the focus of this article is confined to the implementation of CCTV in CBDs in only four city centres in South Africa there have been some similar types of studies done internationally. One of the more comprehensive of these was the series of reports by the UK Home Office in 2005. These, however, looked at a range of sites including town and city centres, but also car parks, hospitals and residential areas and made use of different sources of information in order to assess the impact of CCTV. These reports made comparisons on 'before and after' in terms of reduction in crime in the surveilled areas. These differing sources of information ranged from police recorded crime statistics - to measure changes in levels of crime – and also looked at possible crime displacement patterns; public attitude surveys (residential in-home and town/city centre in-street surveys; other crime reduction initiatives operating within the intervention and control areas. The researchers in the UK study also gathered information on and assessed implementation processes, why the designers chose CCTV, the technical specification and design for the different systems; control room operations and management processes (see Gill & Spriggs, 2005). All of the 13 (one of which consisted of two separate systems but managed and operated conjointly) CCTV systems evaluated in the UK report had the broad objective of reducing crime. While the South African research project looked only at the implementation of

[60] The researchers on the South African study approached the research from a private security and crime analysis (albeit a narrow) perspective, with all having a background in either criminology/police science or in the smaller specialist field of private security studies. Furthermore all are teaching staff in the Department of Security Risk Management at the University of South Africa, which department is the only such department in South African and Africa that offers tertiary level qualifications in security management to the private security industry in South Africa.

[61] See the seminal work on this by Levesley & Martin, 2005. This study also looked at how police make use of CCTV; police officers' views on its effectiveness and how it could be improved; the seizure of images and presentation of evidence; and the interaction between patrol officers and CCTV operators. The latter aspect was touched upon to a certain extent in the South African study when describing control room operations in the four selected South African CBDs.

[62] Of interest from an international perspective is the Spriggs (et al., 2004) report, which although a pre-implementation survey of public perceptions and attitudes, nevertheless was one of the few that tested public opinion on CCTV. Another study which also based some of its research on a public survey was the Wells, Allard & Wilson (2006) research carried out on the Gold Coast Security Camera Network and the Queensland City Rail Network in Australia which explores the use and effectiveness of CCTV as a crime prevention tool.

CCTV surveillance systems in the major CBDs – and for the purpose of this article reported on only four case studies – some interesting parallels but also differences were revealed.

The UK CCTV initiative was a much earlier initiative, with considerably larger funding being provided directly from government. The CCTV systems in the UK were set up under the Home Office Crime Reduction Programme announced in 1998 with £170 million (approximately R2,4 billion) being made available for the funding of a total of 684 CCTV projects countrywide.[63] These have been installed in a wide range of locations, including car parks, town and city centres, and residential areas. (Gill & Spriggs, 2005: 1). Obviously the South African situation just did not support such kind of government funding let alone from private sources. Public CCTV in South Africa has been concentrated only on CBD (inner city) areas (although as mentioned above a slow start has been made in covering residential urban spaces – but all privately funded) and using business sector start up funding whereafter systems have tended to tap into municipal annual budgets for crime reduction. It appears that Home Office funding was a big motivation and incentive ("carrot") for local UK city and town councils to implement CCTV systems, a big impetus for its installation, particularly along transport systems (underground rail in particular and rail stations) was the '9/11' incident in the USA in September 2001. The bombings in London in July 2005 seemed to justify not so much the 'crime reduction' motivations but the anti-terrorism and state security motivations. In contrast the South African CBD implementations have been solely and consistently rooted in the 'high levels of crime' and perceptions of safety and security of citizens (fear of crime).

The South African systems, although initial operational planning, training and logistical management processes were based on a review visit to various international sites[64] all over the world, have developed their own standards and benchmarks independently of overseas influences. This development was also in tandem with similar developments (problems and solutions) as being experienced in the heaviest surveilled country, namely the UK.[65]

Furthermore, there appears to be a great concurrence in how the systems have been operated and installed. For instance the aim of 100% coverage of certain areas (e.g. all London Underground (rail) station car parks) in order to reduce the incidence of crime; to improve the provision of crime information (to be used as crime intelligence on criminal behaviour and identification, for example, of crime 'hot spots') and finally to improve the personal safety of the users of such surveilled public space. Like the UK systems the South African CBD systems operated on the general crime reduction/prevention principles of deterrence of potential offenders through the presence of cameras; increasing the detection of offences in particular by providing for the immediate deployment of response (police) to incident scenes, and the detention of suspects (arrest of identified offenders leading to future prosecution by providing evidence for court) (see Gill et al. 2005b). In addition, again like the South African situation, the

63 In the UK CCTV has become the "single most heavily funded non-criminal justice crime prevention measure." (Welsh & Farrendon, 2003: 4). By 2002 there were more than 40 000 cameras in the UK (Armitage, 2002).

64 See the Strauch report of 1996.

65 See the series of UK reports, namely: Gill & Spriggs, 2005; Gill et al. 2005a, 2005b & 2005c.

UK systems also wanted (for those city centre systems installed) to address fear of crime and encourage the use of city centres by members of the community. Ancillary to this aim was also that of the regeneration of inner city areas "by identifying issues such as accumulation of litter, damaged or dangerous street signs, and traffic management and bring them to the attention of service providers, leading to their removal" (Gill et al. 2005a: 1) – a view only later stated by South African CBD CCTV installers, and then only when additional funding was sought for expansion of the initial size of the CBD-centred systems, and as justification for 'other' uses of the system (utility as a multi-dimensional municipal services management system).

Where the South African studies do fall short in terms of in-depth analysis is on the side of impact evaluation. Not sufficient research has as yet been conducted for instance on the actual crime statistics, comparison of potential displacement of crime to neighbouring precincts, or the aspect of the diffusion of crime within the surveilled area itself. While the South African study in this article made a start on small street surveys[66] to try to gauge public perceptions of and opinions on the implementation and impact of public open street CBD CCTV. In the four such street surveys undertaken the majority of respondents indicated the main reasons for its implementation as being "to reduce crime" and "to protect people in the street". However, on the question of the impact the South African respondents appeared to be evenly split on whether crime had been reduced or that it had remained the same,[67] i.e. crime continued to be experienced in CBD areas particularly at night and at current South African levels (high in comparison to other international rates).[68]

Furthermore, like the UK studies (see Gill, et al. 2005: 16), the South African CBD CCTV systems are not the panacea for all crime or wholly responsible for crime reduction in surveilled areas. Rather that such systems are but one cog in an overall crime reduction programme and provide support surveillance systems to the overall approach of crime fighting by making them more efficient, effective (in deterring criminals) and responsive (quicker) in catching offenders. One advantage the South African systems do seem to have made use of more than other international systems is the multi-management of municipal services by using CCTV to report on service delivery to the relevant municipal departments (although this was one of the stated aims of the city centre systems in the UK at the start of the implementation of their crime reduction programme) (see Gill, et al. 2005a: 1). What CCTV does appear to do is considerably add to (as found in all the studies looked at) or reinforce the so-called 'multiplier-effect' with its replacement or enhancement of personnel effectiveness (be it private security or police officers).

Although large reductions in crime are consistently claimed the jury, so to say, is still out on this aspect of CCTV surveillance. Because of other influencing variables reductions in crime cannot always be ascribed solely to the implementation and/or presence of CCTV. Furthermore, there

66 Small street surveys (minimum of 50 respondents on a 23 question questionnaire) were conducted over a two week period at the end of February, beginning of March 2007 in Cape Town, Durban, Johannesburg and Pretoria. Preliminary coding and analysis has been applied to the collected responses.

67 The South African respondents do not appear to make subtle distinctions regarding impact of CCTV on crime but simply equate impact with reduction and made no reference to aspects of prevention, increased reporting, detection, displacement or diffusion.

68 See reported crime statistics on the SAPS website: http://www.saps.gov.za.

are fluctuations in the levels of reduction (if any) found in a number of areas that have been looked at. For instance the UK review report found that while all the reviewed systems had the broad objective of reducing crime, out of the 13 systems evaluated only six showed a "relatively substantial reduction" in crime in the target area, only two showed a "statistically significant reduction" in crimes while crime increased in seven of the areas evaluated - but this increase could not definitively be shown to be as a result of the presence of the CCTV (Gill, et al. 2005b: 16).[69]

Furthermore, the effectiveness of CCTV as a crime prevention tool is questioned in a number of the international studies looked at. For instance the Australian research review of the Queensland Rail and Goldcoast surveillance camera network concluded that while it appeared that the installed CCTV camera network was effective at detecting violent crime and/or may result in increased reporting, i.e. lead to a reduction in reported crime, it was a moot point whether it effectively prevented any crime from happening in the first place. It was found that crime continued to occur, sometimes in areas not covered by the cameras (displacement), but that it was now better detected which lead to improved levels of reducing its successful commission (i.e. crime interruption with quicker response by law enforcement officers) (Wells et al, 2006: 9).[70] The UrbanEye research also concluded that much of CCTV's effectiveness is also dependent upon the (operating) mechanisms in place and the type of environment (space) in which it operates (Hempel & Töpfer, 2004: 1).

Overall then, in comparison, one should be careful of categorically stating that certain fixed trends occur from CCTV surveillance systems since there are wide disparities and differences in such variables as size, number of cameras installed, surveillance patterns, environment and areas surveilled, different crimes occurring in different economic neighbourhoods, police attitudes towards its use, response patterns etc. In essence then there is a need for an international database of comparable data so that more in-depth analysis of revealed similar trends can be made. A good database of such comparative studies is provided by the UrbanEye Project.[71] A main finding of the UrbanEye studies being that no broad generalisations[72] or assumptions should be made regarding the extent, nature and impact of CCTV on crime reduction merely on the basis of its presence at any location. The studies also found general support for the use of CCTV even though the general

69 According to Gill (et al. 2005b: 16) the findings in these seven areas "were inconclusive as a range of variables could account for the changes in crime levels, including fluctuations in crime rates caused by seasonal, divisional and national trends and additional initiatives."

70 The Wells (et al, 2006) report explores the use and effectiveness of CCTV as a crime prevention tool in Gold Coast, Queensland public spaces and on the Queensland Rail (QR) Citytrain network where the motivation for its installation was largely to deal with alcohol-related violence and crime and anti-social behaviour.

71 See http://www.urbaneye.net. Between 2001 and 2004 a multidisciplinary team undertook research on the deployment, rise and social and political implications of CCTV in order to study strategies for regulation in seven countries in Europe (Austria, Denmark, Germany, Greta Britain, Hungary, Norway, and Spain) (Hempel & Topfer, 2004: 1).

72 However, fairly similar albeit generalised, findings can be ascribed to the four South African case studies because of the larger number of similarities than differences across the board in them.

public was often uninformed[73] of its workings or even its implementation (Hempel & Töpfer, 2004: 1).

In concluding then this article has made a first attempt to describe and outline how South African CCTV systems placed in CBDs (four selected case studies) were implemented, operated, managed and maintained, and how control room operators were trained, how response by law enforcement is co-ordinated and the perceptions regarding impact on crime reduction.

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[73] The four South African street surveys undertaken in 2007 also found that respondents interviewed were uninformed not only about the workings of the CCTV CBD surveillance systems but also of its presence (no signs indicating the CBD as a camera surveilled area), did not know what the cameras looked like, nor were ever consulted about its installation.

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Mr Neil Strauch (Cueincident Operations Manager). Johannesburg, 24/02/2006.