**Cost Effectiveness in Policing:** Lessons from the UK in improving policing through a better workforce, process and technology.

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In the last decade the cost effectiveness of policing has rapidly risen up the agenda of public service reform, not just in the UK but also more widely in Europe and America. There are a number of reasons for this but the most recent accelerator of priority has been the world economic crisis that started in 2007 and it's long-term impact on the fiscal stability on both national and local governments. However, the concerns about the cost effectiveness of policing go further back well before the recession. The cost of policing in relative terms has been rising (Ayling et al., 2008), and over the last 20 years or so policing services have had to rely more and more on a wider range of funding sources, not simply the grant from central or local governments but also the generation of income of sponsorship from a variety of third party policing agreements (Mazerolle and Ransley, 2006). It has been the rising cost of not just the workforce in policing but also the technology needed to support effective policing. This ranges from information technology, communications infrastructure through to the provision of forensic services. It is this that has put more pressure on policing budgets relative to other budgets (Fogelong and Gascon, forthcoming).

In England and Wales spending on the police had risen significantly through the 1980's and 1990's. During this period there was an increase in the series of initiatives to measure the police services outcomes better which combined with the best value approaches, resulted in value for money. The language of value for money entered the modern dictionary of policing in England and Wales with the Home Office circular 114 of 1983 in which the provision of further establishment for policing either in police officers or police staff (civilian non-attested officers) was linked specifically to the ability to demonstrate value for money, in that circular summarised as, "efficiency and effectiveness" (Home Office, 1983). At that stage in the early 80's the measures were still crude: the simple comparative measurement of crime recording and detection measures combined with overall costs along a broad set of measures. Initially Her Majesty's Inspectorate of Constabulary provided a matrix of those indicators, which helped to form judgements about forces relative efficiency and effectiveness. Then through the 1990's that structure was more formalised with the passing of The Police and Magistrates Courts Act (1994) and the addition of the Best Value Duty to police authorities, along with the arrival of the Audit Commission (the National Regulator of Local Government) to the policing scene to do Value for Money studies and to assess effectiveness against the best value "performance indicators".

More recently the Treasury (Spottiswoode, 2006) commissioned a significant study of the way in which comparative statistical techniques that have been applied to other parts of the public sector such as, Data Envelope Analysis and Stochastic Frontier Analysis could be applied to provide more stable comparative efficiency measures. However, as Smith & Street (2005) pointed out in a study

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of public service efficiency there are limits to that form of analysis particularly where, "complex, poorly understood processes, such as those undertaken by police forces are being examined, where such methods must be used with great caution". (Smith & Street, 2005, P.2)

The challenge with all of this data applied to British policing was until recently the absence of an overall strategic approach, which sought to link the development of the capability of the service with measures of efficiency over a longer term. The strategy thus far had been to continue to improve the measures and let the government's processes in policing ranging from the Inspectorate regulating the Audit Commission conducting Value for Money studies and police authorities to make the judgements about relative efficiency without necessarily thinking about how the service would be improved by the application of the benchmark data. The approach of this paper is to look at the way in which the UK is approaching cost effectiveness anew and seeking to link that with the development of capability over the longer term through the improvement of technology the processes of policing and the way in which the workforce is managed. The focus will be on the work that the National Policing Improvement Agency was set up to accomplish in 2007 and how the Police service in England and Wales has sought to bring together the disciplines of technology, work force and efficiency to improve the cost effectiveness of policing over the longer term. There are inherent challenges in this, particularly with a policing system such as that in England and Wales in which there are 43 locally accountable forces that are within a national framework of governance, which separates out the roles of the Chief Constable, the Local Police Authority and the Home Secretary. However, the article will focus on a national overview of efficiency and effectiveness viewing efficiency of the whole system of policing rather than the individual forces in order to try and draw out some broader lessons for policing and for how more cost effectiveness policing might be when thoughtfully developed over the longer term.

## The National Policing Improvement Agency & The National Improvement Strategy for Policing

In order to understand the development of the role of the National Policing Improvement Agency (NPIA) in England and Wales it is quite important to understand the British system of policing and the way in which it has developed since the Royal Commission on policing in 1962. Prior to 1962 and the 1964 Police Act, policing was primarily a municipal or county based function with the prime responsibility being that of local government both within a municipal borough or county district. The Home Secretary had a small range of reserved powers that had gradually accrued since the foundation of the modern police service in the 1820's, 1830's and 1840's. With the 1962 Royal Commission and the subsequent 1964 Police Act a much clearer division of labour was established between the Home Secretary, Police Authority and Chief Constable, one that had become over that period less a tripartite relationship and more a hierarchical one (Newburn & Jones 1997). The Home Secretary has the overall responsibility for efficiency and effectiveness, the Police Authority for maintaining an adequate and appropriate police force and the Chief Constable for the operational direction and control of the force. Over the 40-year period since the 1964 Police Act the powers of the Home Secretary to direct and provide national guidance gradually

increased. Partly in response to the desire for greater value for money and assurance of efficiency and effectiveness, partly because of a rise in the importance of crime and policing in the national agenda and partly in response to the changing demands on policing, in particular the need for greater regional and cross national cooperation to deal with organised crime and the need to cooperate better together to maximise the benefits of major technology and infrastructure such the Airwave Radio Communications System.

Gradually through the 1980's and 1990's the small support functions at the centre that were provided from the 1970's, a police national computer and a small number of what where known as Common Police Services and in particular the provisions of radios grew in importance in order to respond to the need for common technologies and common approaches to national procurement. Also, the need to move beyond the narrow provision of national leadership training to national specialist crime training and the provision of national doctrine about, in particular, specialist functions like the investigation of major crime. By early 2000 the police service was managing a series of major programmes of change through four or five separate organisations, a Police Information Technology organisation, a Learning and Training organisation, Centrex and around 500-600 programmes and projects some run by those organisations some run by the Association of Chief Police Officers and some by the Home Office, some separate entities and partly under the governance of the Home Office. There was, as the business case for the NPIA stated, a need to rationalise the landscape.

The NPIA was set up in response to that challenging landscape, particularly in response to recognition that managing change in a modern police service required the collective management of the impact of technology, process change and people change and that that was best done through a single organisation which could manage those impacts in a more co-ordinated way. The NPIA therefore brought together that muddled landscape into a single national agency that falls under the Home Office as a so called 'arms length body'. The agency was specifically designed to be police service led and owned and to take forward change and the development of the police service, such that the police service was engaged in and contributing directly to its own development. That shift was in response to a perception in the service that much of the change over the previous decade had been led by others outside the service in particular by political initiative or developed by the civil service. The NPIA therefore took on responsibility both for running the national infrastructure, ranging from the DNA database to the Police National Computer as well as the development of national programmes, the provision of capability support forces (the ability to provide infield support to develop practice in a force) and the responsibility for national independent research and analysis.

One of the programmes the NPIA has undertaken in its first two and a half years is the development of a 'national improvement strategy for policing'. The rationale for such an approach was the absence of such a plan to support the police service. The problems that were evident in and created by it's absence in particular were that technology programmes were being launched without considering adequately the impact on the skills required and the need for workforce development, or the changes in management or the changes to processes that are necessary to maximise the benefits. As Galliano and Heaton's detailed studies of Information Technology and the police service demonstrates

clearly, adopting new IT in the police service in response to the increase of administrative complexity in the organisation does not of itself enhance crime-fighting effectiveness. Police productivity will improve when, as they say, it is complemented, "with particular management practices and they exemplify "in particular Compstat" (Garicano & Heaton, 2007). The Approach of the National Improvement Strategy is to provide a long term template against seven strands ranging from the development of information and science through to the development of the workforce and its skills (see figure 1.
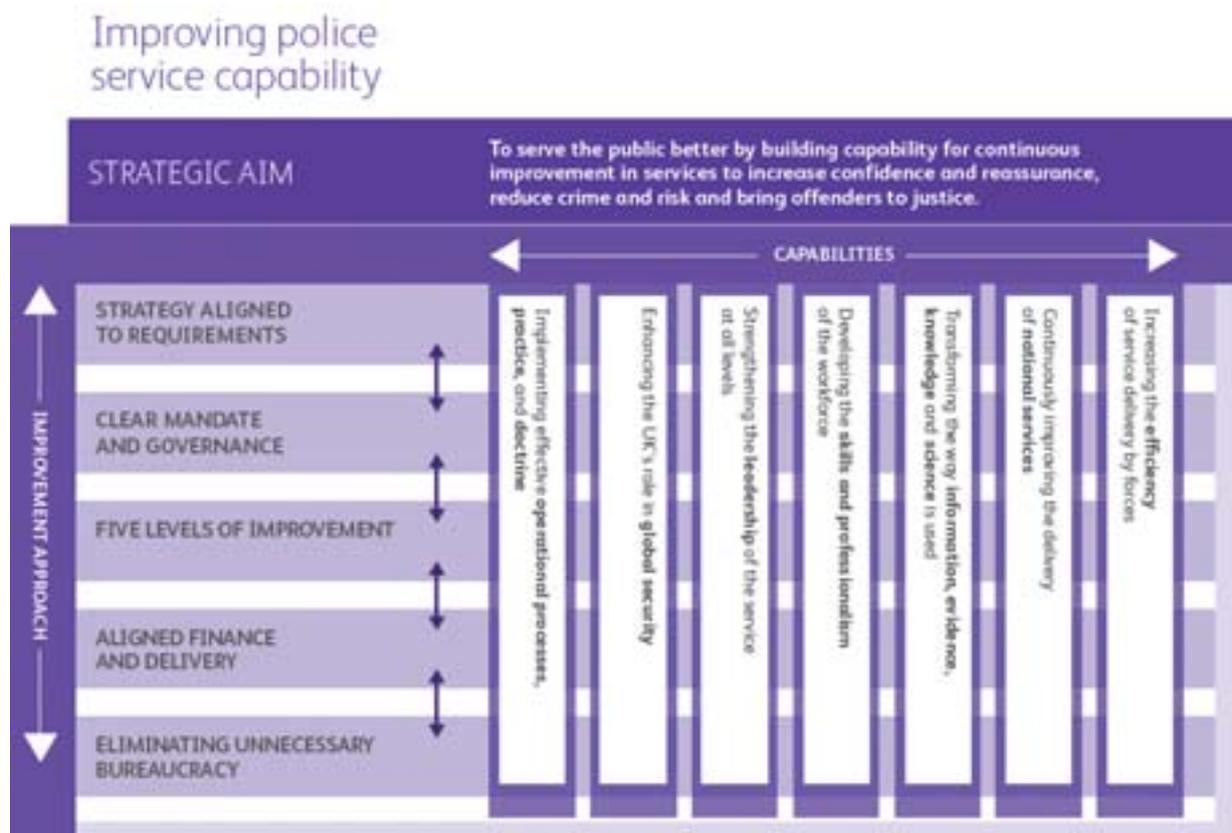


It is designed to allow the long term planning of policing improvement by looking at the best means to accomplish the overall outcomes desired for policing and to understand the connections between different types of change whether it be for workforce or technology.

A number of lessons from examining the previous landscape have been embedded in to the approach taken within this, these can be summarised as follows:

- **Clear mandates and governance.** Many of the programmes that have struggled to succeed in the past lacked a clear mandate at the outset and clarity of governance and a linkage between the governance of the programme and the service. In particular there was a lack of linkage between a business design authority that specified and authorised the operational requirement and the programme that was designed to deliver that requirement. The result was that programmes had a tendency to deliver out of date requirements or the wrong requirements.

- Improvements need to be carefully thought through as to **the level** at which it is seeking to impact cost effectiveness to the service. The intervention needs to be designed carefully to be specific to that level. For example, very obviously the strategy to improve neighbourhood policing which has been one of the major approaches in England and Wales needs to be designed to focus at a very local level and focuses on the development of frontline skills, doctrine and leadership.

- **Aligned Finance and Delivery.** A number of the programmes that the NPIA inherited had a no clear investment path and linkage between national investment and local investment nor indeed where there embedded commitments from local police forces to support the role out of national delivery when national delivery was ready. The result was constant delay in the programmes, which both extended the costs of running the National Programme Team and reduced the long-term benefits of the programme.

- **Change management.** As Manning (2008) has shown in his study of Police Information Technology Adoption, in order to achieve better more cost effective policing from the introduction of technology the management of change needs to be considered carefully and upfront and strongly embedded in the programme with tight programme governance. This was a key lesson of the Neighbourhood Policing Programme (Tuffin et al., 2006). Many programmes that the police service had sought to introduce over the previous decades[2] have focused on the delivery of a product not the delivery of a change in the way that the police service goes about its business. Manning suggests that the police service as a bureaucracy has been highly resistant to change and that instead of technology changing the police service, the police service has forced technology to adapt to it. In doing so, it has delivered sub-optimal results. Ackroyd et al. (1992), Chan (2003) and Garicarno and Heaton (2007) are not so down beat about the changes delivered by technology but all, like Manning, emphasise the challenges of introducing change in the police service.

## Case Studies of Improvement

The next section of this paper will take the framework of the National Improvement Strategy for Policing and discuss implementing those changes by using a series of case studies that are current change programmes that the NPIA are running.

The paper will seek to discuss the challenges of each type of change and how in England and Wales the benefits and impact of the change have been managed in order to achieve a cost effective impact in policing. The discussion of the case studies will then lead to some conclusions and implications for making change and delivering cost effective policing.

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[2] From the author's experience.

Case Study 1
Transforming the work force

The UK has a long history of civilianising roles in policing which goes back to the 1960's and beyond. However, over the last decade that process of redesigning the workforce and reconsidering the role of the constable (fully attested police officer) at the heart of policing has moved on apace. In particular the creation of the role of Police Community Support Officer (PCSO) and the addition of the partly empowered roles within custody and within partly empowered investigation staff has offered UK policing the opportunity to reconsider the nature of the workforce against the tasks of modern policing. The National Workforce Modernisation Programme, which was started 3 years ago, formalised into a programme structure a number of different streams of work, looking at the best fit of workforce resource to frontline task. This has been a complex programme to negotiate with staff associations, which have been uncomfortable about the title 'workforce modernisation' seeing it as an implicit criticism of the nature of the previous workforce. There have been long term tensions over the expansion of the non-attested part of the workforce and, in particular, the development of the PCSO role. The Police Federation, the principle staff association for frontline officers, has argued that the PCSO role has not been properly or formally evaluated and it would be fair to say that the major evaluations have been as part of the wider evaluations in England and Wales of the Neighbourhood Policing Initiative (Tuffin et al., 2006).

In order to answer some of the concerns and also to ensure a secure basis for assessing change the work force modernisation approach that NPIA has led has focused on ensuring a tight and secure baseline of data so that change by comparison, both in terms of cost and performance, can be properly measured and fully assessed. So far 2 interim reports have been published (NPIA 2009). The reports illustrate many of the challenges that Manning documents in respect of technology: the challenges of making a change in the short term in policing; the requirements of effective leadership and programme management to ensure change is effectively delivered. However, the pilots involved some quite radical changes, challenging practices that have been identified as highly inefficient such as:

- Core emergency response officers attending non-priority crimes
- Lengthy time delays in the investigation process due to historic allocation approaches that took insufficient account of annual leave, shift changes and sickness
- Inefficient use of skills and experience, for example highly skilled police officers processing finger prints.

Starting from the viewpoint of mapping the tasks and the processes more effectively, the programme has sought to match skills to tasks and in particular has focused on matching the most specialist skills to the most specialist tasks. The net result is the effective creation of an auxiliary class of police support for more mundane and volume tasks. The independent evaluation has demonstrated the potential for an extra 50% capacity within investigation teams. A major part of this gain comes from more efficient deployment practices to manage a significant proportion of the more traditional response approach by appointment rather than by the highly inefficient process of responding at the time when the

public call. Secondly, the re-alignment of tasks has been shown to release significant amounts of unproductive frontline officer time. The challenges that face the police service with such change are: concerns from the staff associations about the number of fully trained detectives; challenges around the changing the nature of the role of the constable; and challenges of public perception about the nature of the police that now serves them.

Case Study 2
Mobile Information

Prior to the creation of the NPIA there have been a whole series of pilots for the use of mobile information by the police service in the UK. A number of forces had terminals within patrol vehicles that were able to access the Police National Computer and, in some cases, the forces Local Command and Control Systems. A small number of forces had been piloting the use of Palm Pilots or hand held terminals to provide access to both local and national data, but there had been no comprehensive national programme to look at the introduction of mobile information. The disadvantage of relying on the local approach was that each one of the pilots sought to configure the hand held device differently. There was no common bearer or ICT infrastructure and no national procurement to ensure the efficient purchasing and supply of the equipment. Last, but by no means least, there were no national standards in the event that the individual police forces needed to inter-operate in dealing with incidents, both major and minor, let alone the ability of the police service to inter-operate with the fire and other emergency services.

In 2007 the Prime Minister announced at the Labour Party conference that a programme would be started to introduce a further 10,000 mobile devices to police officers in the UK. The political driver for the change was the reduction of bureaucracy and the freeing up of time of the accessing terminals within the police station. The National Mobile Information Programme was broadened out to encompass not just the freeing up of time and the reduction bureaucracy but also the more effective use of information. The medium term potential to link nominal information from identification such as fingerprints or to provide officers with the targeted information about crime locations and target offenders was seen as a key support for the England and Wales police services national intelligence model (NCPE, 2005). Between 2007-2009 £18,000,000 worth of funding has been provided to the forces in the UK and has delivered more than 30,000 handheld devices to frontline officers. Taken together with the additional purchasing from local police forces more than half of the frontline officers in UK policing will have been provided with mobile technology during the course of the programme, with a particular focus on response and neighbourhood policing officers.

The national programme has allowed the creation of national standards, a national procurement approach and a single approach to ensuring that the benefits of the change, particularly the freeing up of officer time and the effectiveness of the accessing of information, can be assessed and developed in one way. The overall assessment of the programme by 2009 suggests that the provision of mobile information has freed up the equivalent of 30 minutes per shift or the equivalent of £109 million worth of efficiency savings over 5 years, or the equivalent of some 6,500 police officers. The early studies indicated that

time out of the police station had increased between by up to 45 minutes and the ability to access the Police National computer and call local information systems has improved officers on street effectiveness.

In the medium term this should be significantly enhanced by the combination of the mobile information platforms with the Lantern Programme that the NPIA has also rolled out, which at the moment provides a separate platform for mobile finger print identification. The latter programme, Lantern, has both increased the number of identifications for arrest and reduced the number of unnecessary arrests. It has achieved the latter benefit by allowing officers, because of the certainty of on street identification, to release offenders on the street to be dealt by way of summons to court rather than being taken to a police station for their identification to be verified with the fingerprint system within the police station. The early studies on Mobile Information Programme and Lantern indicate that the combination of information and identification technologies on the street significantly enhance the potential cost effectiveness of each individual patrol officer.

The major challenge, as mobile technology is implemented, is for the leadership of the service, both at a strategic level and at the frontline, to ensure that the time that is freed by the provision of the technology and the effectiveness that is released by the information identification is refocused on the right outcomes. Manning (2009) argues that this is very difficult to achieve whereas Garicarno and Heaton suggest that with right managerial effort, significant increases in cost effectiveness can be accomplished. It is important that the police service and those who govern the police service focus on this latter point because the technologies that are beginning to be introduced on the street in the form of mobile fingerprint identification (and that are about to be introduced in the form of accelerated DNA identification) have the potential to accelerate the identification of offenders from a matter of weeks and months to hours. For cost effectiveness to be maximised this means a radical reconfiguration of some very traditional operational processes. An illustration of this is the change to the time taken within the UK from 2008 to 2009 to provide fingerprint identification from a crime scene through to its verification. In 2008 it took on average 17 days from mark to identification. In 2009, as a result of the National Remote Transmission project, the average length of time to confirm identification has been reduced to 24 hours, with a real prospect of driving that figure down further to rapid, same day identification therefore reducing the gap between identification and arrest to a matter of hours. This creates the double possibility of a re-organisation of fingerprint bureaux in the UK and the provision of more 24-hour capability, with potential to reduce both the costs and prevent a highly persistent offender committing further offences whilst the identification process proceeds. This also enhances the possibility of the early recovery of significant amounts of property which itself has the potential to enhance the public's confidence in the police services capability to investigate certain types of crime.

The same considerations will apply as accelerated DNA provides a faster identification (approximately an hour) from sample to profile over the next few years. Identifying a potential match across the DNA database within this period will replace the currently unacceptable waiting time between custody sample and profile matching. This is doubly significant, given that DNA in particular has been demonstrated by the Urban Institute study in America (Roman et al., 2008) to

be a very cost effective way of investigating both volume and serious crime (by a factor of 5, much more effective than standard methods of investigation, including the use of fingerprints). Accelerating identification both by fingerprints and DNA has the capability over the medium term to transform the effectiveness of police investigations provided that, as Manning would say, the wider processes of investigation are modernised at the same time.

Case Study 3
Automatic Number Plate Recognition

The UK has unquestionably pushed the development of Automatic Number Plate Recognition (ANPR) faster than almost any country in the world and did so very much from the point of efficiency and cost effectiveness in policing. The original independent evaluation of a Number Plate Recognition (Project Laser) in 2006/7 suggested that police officers who were working with Automatic Number Plate Recognition were significantly more productive than colleagues who were not (PA Consulting, 2004). That study was not a randomised controlled trial and it is one of the lessons from many of the programmes discussed here that properly constructed, scientifically valid studies are all too frequently neglected as being too difficult or too expensive, despite the millions being invested in the programmes. Without such studies, effective cost benefit analysis is difficult to achieve.

In the case of ANPR in the UK, there have been several stages of development. The initial approach was to provide ANPR cameras at mobile sites loaded with local intelligence and Police National Computer data and targeted on particular crime spots within force areas. A national fixed camera infrastructure was then been developed with particular focus on the issues of counter terrorism. The most recent development in the UK is to create a national ANPR data centre that receives the 8 million number plate reads per day from each forces' data store of number plate reads and allows forces to both, flag serious crime targets and also to analyse data post incident and in particular post a serious crime incident such as a major robbery or a homicide.

Lessons with implementing ANPR are not dissimilar to those with the provision of mobile information and they relate again to the lessons from Manning's study of Information Technology that the provision of the technology alone may well enhance the quantity of activity by police officers but, without effective management and targeting of that resource, it is quantity alone that will rise rather than the quality of outcome. In the UK this issue has become significantly more important with the shift away from volume crime performance indicators as the basis of assessing effectiveness of outcome in policing in the UK. This has led to putting public confidence at the pyramid of performance outcome with the more traditional measures of crime detection and crime performance data being relegated to part of the suite of data that a local police authority might take into account in determining whether a local force performance was meeting that requirement. The traditional approach to measuring the effectiveness of ANPR focussed on the weight of outcome in terms of the number of identifications and arrests rather than the preventive effects and the quality of the arrests that have resulted. This illustrates how quickly 'cost effectiveness' of policing can change: only 12 months ago in the UK it would have a been simple matter of calculating a ratio of the number of arrests per officer gained using ANPR versus

the numbers for officers without ANPR; in 2009 simple productivity is still important but it must also embrace a fair process that engenders greater confidence and effectiveness against serious crimes.

## Discussions and Implications

The paper has sought to use three case studies to illustrate some of the challenges in making policing more cost effective and has used the current work of the NPIA in England and Wales to as the framework. One overall lesson from this paper is the importance of thinking about cost effectiveness at different levels, in particular local and national. In this paper the focus has been on the National Programmes that are designed to achieve more cost effective approaches through either workforce design or technology improvements. Most criminology studies tend to focus very much on the local application of change rather than on the structures and the strategies that are designed to support those changes. The lesson of the pre-NPIA landscape was that local change whilst effective, as in the case of mobile information pilots, in achieving some local improvement, will struggle to achieve the type of major improvements in cost effectiveness that a properly constructed national programme with good local leadership support could achieve. This is particularly the case with technology where the costs and complexity of programme management in the twenty-first century mean that procuring, programme managing and implementing change is probably most effectively done with national leadership and national field support to local forces rather than through, in the UK's case the 43 forces at tackling the same problem. In England and Wales the collective recognition of this can be seen in the commitment to a new National Information System Improvement Strategy which is designed to charter a medium and long term approach to national police IT development, procurement and contract management. This is a major challenge because previous approaches to this through the provisions of national applications have not been entirely successful largely because of the lack of join up between technology change, development of the leadership of the service and the development of the processes by which policing is delivered.

One aspect of the delivery of more cost effective policing which the programmes case studied in this paper do illustrate, which has not been discussed above is the acceptability of the changes to the public and therefore their impact on the legitimacy of the police service. Some of the acceptability is in the way in which the police service presents the change to the public, or the way in which the change is portrayed in the media. The shift to deploy Police Community Support Officers in local communities is, according to survey work underpinning the evaluation of the National Neighbourhood Policing Project, extremely popular. However, in both the National Staff Association comment and in a part of the national media in the UK, PCSOs have been portrayed in a far less favourable fashion, with the sobriquet 'plastic policeman' being used to describe the PCSO's in the some of the least positive commentaries. Similarly, the introduction of ANPR and its rapid expansion to every force and to a National Data Centre has raised concern about civil liberties and the 'surveillance society'. This example highlights the need to ensure that the introduction of new technologies particularly those that involve surveillance or provide forensic evidence such DNA and fingerprints require tight and independent evaluation and the careful

consideration of the way in which these technologies are applied, the ways its application will be monitored and the transparency in the way the data is communicated to the public (Morgan & Neyroud, forthcoming). In the march towards cost effectiveness it is perhaps easy to miss the fact that a change that is not acceptable to the public and which reduces the legitimacy of the police might well be more efficient and increase the output per input unit, but might well reduce the capacity of the police service to accomplish its aims buy reducing the confidence of the public to engage with the service. Cost effectiveness is not something that can be considered on its own but has to be seen with regards to its overall effectiveness to the police service and the way in which it is perceived and engaged by the public.

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