AUTOMATED LICENSE PLATE RECOGNITION (ALPR)

How Long Should the Data Retention Period Be?

Prepared by: Jennifer Armstrong, Julie Czeck, Mike Franklin, and Darryl Plecas

A review prepared for E Division Traffic Services, August 2010

UNIVERSITY OF THE FRASER VALLEY

CENTRE FOR PUBLIC SAFETY & CRIMINAL JUSTICE RESEARCH

Table of Contents

Introduction

Automated License Plate Recognition (ALPR), also known as Automated Number Plate Recognition (ANPR), is quickly becoming an efficient and effective tool for law enforcement agencies to assist police officers in identifying vehicles that are uninsured, stolen, or driven by someone without a license or prohibited from driving. It is also used by law enforcement to control access to restricted areas, to patrol international borders, and, in some parts of the world, as a counter-terrorism measure. This technology is considered so effective that, in 2007, the International Association of Chiefs of Police passed a resolution encouraging jurisdictions everywhere to adopt and implement the technology.

ALPR was first developed in the United Kingdom in 1976 at the Police Scientific Development Branch, now known as the Home Office Scientific Development Branch, as a means to combat the use of car bombs in mainland Britain by the Irish Republican Army (IRA). Development of the technology continued and, by the end of the 1990's, the Home Office sponsored a static ANPR system as a pilot in nine different police forces. Following this, the UK government expanded the use of the technology to include all 43 police forces, each of which was provided with a mobile version of the system.

Today ALPR technology, in one form or another, is commonplace in more than 40 countries around the world, including Australia, Albania, Austria, Azerbaijan, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Sweden, Lithuania, Romania, Netherlands, Luxemburg, Poland, Republic of Ireland, Spain, Switzerland, Turkey, Ukraine, and Portugal. While used less broadly, ALPR technology has also been implemented Algeria, Nigeria, South Africa, Brazil, Venezuela, Hong Kong, and Israel. In North America, the technology has been used in all of the US states and in Canada; ALPR is used in British Columbia, Alberta, Manitoba, Ontario, Quebec, and Saskatchewan.

In general, ALPR systems consist of camera-equipped police vehicles designed to photograph and compare up to 3,000 licence plates per hour against a database of "known plates" to allow the police officer to identify, without the officer's assistance, whether there is something untoward about any vehicle coming into the range of the ALPR camera. In Canada, the list of "known plates" is referred to as "hot lists" that are updated daily with information from law enforcement agencies, such as the Canadian Police Information Center (CPIC), Provincial Motor Vehicle Branches, and provincial government insurance authorities. In other countries, such as the UK and the USA, multiple agencies contribute to the "hot list". If a license plate photographed by the camera matches a plate from the "known plates" database, it is considered a "hit". At this point, the system emits an audible in-car alarm alerting the police officer to the hit and providing information about the nature of the hit, such as the hit corresponding to a stolen vehicle or an uninsured vehicle or driver (Cohen, McCormick, & Plecas, 2007).

In addition to this common and primary use of ALPR technology, there is the additional potential to use previously captured plates or "non-hits" in criminal investigations. The use of such information is commonly referred to as secondary data because the information is not directly related to a driving offence or used immediately. An example of the collected license plate data being used

secondarily would be when an officer has been provided with a partial license plate by a witness to a crime, and then manually enters this information into a stored database of previously captured license plates in order to see if a match can be established.

Importantly, regardless of whether ALPR technology is used for driving offences or as an additional tool in non-driving criminal offences, ALPR facilitates what police officers on patrol and traffic duty do. Whereas officers would normally make a determination based on their experiences and training about whether there was a reason to enter a license plate into their mobile data terminals, ALPR automates the process, thus significantly increasing the capacity of police to check and record information on vehicles far beyond what they could ever accomplish manually. For example, while officers, on average, are able to manually enter 50 to 100 license plates in a 12-hour shift, ALPR technology has the ability to read and record as many as 3,000 plates per hour (Cohen et al., 2007).

As mentioned above, in addition to the benefits of ALPR relating to driving offences, its use facilitates the ability of police to solve a wide range of crime types. Some of the kinds of crimes solved using ALPR technology through secondary (investigative) means include burglaries, possession and distribution of narcotics, firearm violations, homicides, kidnapping, sexual-based offences, terrorism related offences, robberies, and child abduction cases (see the listing provided in Appendix A). For example, in the UK, the use of ALPR technology has resulted in ANPR intercept teams achieving an arrest rate ten times greater than the national average (Dean, personal communication, 2010). In Northampton, England, 30% of all arrests can be traced back to ANPR intercept teams (Dean, personal communication, 2010). This improved arrest ability should not be surprising given the known link between vehicle crime and other crimes. For example, the Home Office in the UK concluded that there was a strong correlation between vehicle crime and other crimes (Home Office RDS, 1999). The Home Office also found that disqualified drivers showed a similar offending profile to mainstream criminal offenders (Home Office RDS, 2003). Further, research on auto thieves in British Columbia demonstrated that at least 30% were prolific offenders (Armstrong, Haarhoff, McCormick, Cohen, and Plecas, 2010).

However, as much as ALPR technology has shown itself to be advantageous to law enforcement, a number of concerns have been raised about its use. These concerns have commonly focused on a range of privacy issues associated with the collection of an individual's personally identifiable information (PII) in relation to their driving habits, how the information collected has been used, how the information has been disseminated, and the length of time the information is retained by criminal justice agencies (International Association of Chiefs of Police, 2009). With this in mind, the purpose of this report is to examine how various jurisdictions have dealt with the issue of ALPR data retention. The examination originated with a request from the RCMP 'E' Division Traffic Services which was particularly concerned with how long ALPR data could be held. The report concludes with a recommendation that speaks directly to that issue.

Methodology

The methodology for conducting this examination consisted of two parts. The first part involved contacting as many jurisdictions as possible and asking them a series of questions on the nature and extent of ALPR use within their authority. The exercise of contacting suitable police

jurisdictions was facilitated by an initial contact with the world headquarters of ALPR PIPS-Technology in Tennessee, USA. ALPR PIPS-Technology provided a list of selected law enforcement agencies that used ALPR and had indicated a willingness to share information about their experiences with the technology. Using a snowball sampling method, the final sample included 78 police jurisdictions. All police jurisdictions were contacted by either phone or email to solicit their participation with the study. The survey questions were:

1. How is ALPR technology used in your jurisdiction?
2. How long has the technology been in use?
3. Is the retrieved data stored?
4. Who stores the data?
5. For how long is the data stored?
6. What data from other sources is included in the database?
7. How is the stored data used?
8. To what extent has stored data proved helpful in the investigation of crime unrelated to driving matters (and at what point did it prove helpful… e.g. after one year)?
9. What privacy issues have presented a challenge and how have you dealt with them?

Beyond contacts with specific jurisdictions, the researchers also contacted the International Association of Chiefs of Police Technology Centre who provided further contacts, as well as its perspective on the survey questions.

The second part of the methodology involved visiting the UK to meet with various ANPR experts and policy makers. This included attending a meeting of the ANPR development team at Hertfordshire Police Headquarters (Herts HQ), meeting with the Assistant Chief Constable of Herts HQ, attending a presentation offered by the ACPO National ANPR Coordinator, participating in a ride-along with an ANPR Intercept Team, meeting with Executive Director of the European Secure Vehicle Alliance and Viscount Simon at the House of Lords, meeting at the Home Office Scientific Branch with various academic research and vehicle crime policy leaders, and meeting with key CCTV players at the Transport for London Control room. Collectively, these meetings were invaluable as they were largely with individuals who had been and continue to be involved in the development and implementation of ANPR.

Research Results

Although each participant was asked a number of important questions, the central issue for this report involved consideration of what is the most appropriate amount of time to hold ALPR data. As demonstrated in Table 1, there is much variation in how long data is currently stored by the various police jurisdictions. For example, in the US, while New York State holds the data for an indefinite period, some western states, such as California and Arizona, typically retain the data for a period of between 60 days to two years. In the United Kingdom, all data, including non-hits, can be retained for at least two years. This period can be extended to six years or more for investigative purposes. Moreover, in Australia, the period of time that the ALPR data can be retained varies considerably, with the majority of states not storing the data at all. Similarly, Germany and Holland do not store any data.

TABLE 1: DATA RETENTION PERIODS

Jurisdiction	Infringement Data	Secondary Data
Australia	10 years	Immediate discard – Varied
United Kingdom	5 years or more	2 years (after 90 days no access unless connected to serious crime)
Canada	2 years	No current retention
Holland	Hot List with retention implied, but no period declared	Immediate discard, unless connected to serious crime
France	10 years for traffic code violations; 1 year for the prosecution of criminal offences	
Germany	No specific period indentified.	Immediate discard
United States of America	(See examples below)	
Maine	72 hours	
New York	Indefinitely	Indefinitely
New Hampshire	None	None
Texas	Cannot reach a decision	Cannot reach a decision
Minnesota	48 hours	
California	See examples of variation within the State of California below	
City of Southgate	Held until data storage capacity is saturated	Held until data storage capacity is saturated
City of Irvine	Minimum 30 months	Held until data storage capacity is saturated
Escondido	24 months	24 months
San Bernardino County	No purge policy	Currently stores all data indefinitely
Arizona	See examples of variation within the State of Arizona below	
Tucson	60 days unless specific investigation	unless needed for a specific investigation
Glendale	Minimum 90 days	looking to store for 1-2 years (capacity limited)
Scottsdale	Over 2 years	Over 2 years

In thinking about why data would be held for different periods across jurisdictions, it is necessary to consider three important issues. These issues are: (1) data storage capacity; (2) efficiency; and (3) privacy. In respect to capacity, it is clear that the size of the server available determines how much data can be stored. Smaller jurisdictions typically have smaller servers, while larger jurisdictions have larger servers because of the need to handle larger amounts of data related to population size. For example, New York State, being one of those larger jurisdictions by population essentially has the capacity to store their data indefinitely. In addition to just population size, concerns about terrorism also motivated New York State to ensure that it had the capacity to store and retain massive amounts of data, thus motivating the desire for servers with extremely large capacities.

Still, there is the need to consider the cost/benefit of capacity. It would be difficult to justify having a server capable of holding data for several years if the servers associated costs exceeded the benefits derived from accessing the data. For example, in the UK, 98% of stored data that was used successfully in secondary investigations was stored for less than one year. Accordingly, we need to ask if it is worth storing data for more than one year. Furthermore, there is the question of the efficiency of keeping data beyond statute of limitation times. In this regard, while offences that are more serious have longer statutes of limitation times, those offences also occur much less frequently and are less likely to be assisted by the availability of secondary data.

With respect to the issue of efficiency, there does not appear to be a benefit to extending the data retention time to the extent that the data servers become slow and much less in-the-field effective. As was pointed out in a conversation with an ALPR unit commander in Long Beach, California, there is a noticeable slowing down of access for an officer when the server is overloaded. Again, the benefit of a longer retention period needs to be assessed against the loss of speed or the cost of upgrading servers to address lag or overloading issues.

The final common issue is privacy. Part of the problem is that the public typically does not fully understand how ALPR works. Some people believe that ALPR technology can read a license plate and instantly provide the police officer with the vehicle owner's home address, phone number, or personal security information. Furthermore, there is the misconception that ALPR provides the police with private information about the owner of the vehicle. The IACP privacy impact assessment referred to this assumption as having a "chilling effect" on the public (IACP, 2009).

Given these criticisms, it would appear that the main concern from the public is with the matter of accessing the data for secondary purposes. However, in practice, an officer would only examine non-hit data where the plate in question was part of another investigation. In other words, the license plate data and any connected information about the vehicle owner would be used in the same way as any other piece of data collected by the police during a typical investigation. In effect, all police jurisdictions have procedures for accessing police databanks, and officers need to be able to justify their reasons for making queries about individuals. Clearly, it would be wrong for police to use the non-hit data for fishing expeditions. However, it is assumed that officers would only access the data in cases where they had a hit that was potentially relevant to an ongoing investigation. Nonetheless, it should not be hard to develop specific protocols around the appropriate use of hit and non-hit data for investigative purposes.

The question of data retention can be considered through the four-factor context of support

advanced in 2010 by the IACP. According to the IACP, financial, technical, social, and political factors must all be considered when assessing whether there exists a receptive environment for the implementation of ALPR technology and when establishing retention periods (IACP, 2010). All four of these IACP factors are interrelated and integrated with the three critical issues of capacity, efficiency, and privacy.

The financial factor is very much integrated within the scope of capacity and efficiency. In terms of a financially supportive environment for ALPR in a given jurisdiction, there must be an identified need and related benefits associated to the implementation and use of ALPR technology. Assessing this need, in part, requires undertaking a cost/benefit comparison of what a jurisdiction is able to afford compared to what the "benefits" of the storage of license plate data can produce. If the jurisdiction is small, has less crime, and has limited resources, the push for a larger server and longer retention periods is likely unnecessary. A critical consideration much also be in the capacity of the police to respond to the increased volume of hits associated with implementing ALPR. Again, smaller jurisdictions with fewer resources may find it extremely difficult to respond to the increased volume of cases. For example, in the UK, there are specific teams whose sole responsibility is to intercept and investigate ALPR hits. This allocation of resources would not be justified in smaller jurisdictions, but ALPR technology could still result in situations where the technology generates more hits than can be effectively responded to by the police.

The technical factor is very much integrated with the capacity issue and interrelated with the financial factor. Each ALPR police jurisdiction must design procedures for how they will respond to the increased volume of cases. In effect, protocols must be established for how to prioritize the response to the hits and to ensure that the databases are maintained and uploaded or live-linked to ALPR police vehicles. This requires a significant financial and maintenance commitment on the part of the police jurisdiction because efficiency and effectiveness requires regular hardware and software upgrades, and ALPR trained staff and police officers. In terms of the relationship between the technical factor and the retention period, this question should be answered by determining the appropriate server size. As discussed above, this should be determined by the volume of crime in the jurisdiction.

The social factor associated with a supportive environment for the implementation of ALPR technology and the storage of data is clear communication to the public about the capability and intended use of the system. As previously mentioned, a clear message is critical to obtaining public support for the use of ALPR. As demonstrated by previous research, a predictable consequence of not properly communicating how ALPR technology is and is not used is the public perception that the data is used by law enforcement in ways that violate citizens' privacy rights.

All three factors are directly related to the political factor. It would be extremely difficult for politicians or any elected official to support the implementation of ALPR if there was little public support for the technology. Clearly, it is necessary for ALPR technology to have both public and political support in order for its implementation to be effective and efficient.

Conclusion

The research literature is clear on the usefulness of ALPR technology. The International Chiefs of Police acted appropriately in encouraging all police jurisdictions to adopt and use the technology to its maximum potential. The UK has been a clear leader in the development and implementation of this technology and has demonstrated that it is possible to employ the technology with many distinct databases. They have also demonstrated the added benefits of interfacing ALPR with CCTV and that it is possible for police to substantially improve their detection of crime and apprehension of offenders. Importantly, UK police jurisdictions have demonstrated how they can effectively use secondary ALPR data.

Determining the appropriate length of time to retain ALPR data must include a jurisdiction-specific consideration of capacity, efficiency, and privacy concerns. Still, it would appear that the potential infringement on privacy is not inherent in the use of ALPR per se. Rather, to be fully respectful of privacy concerns; jurisdictions must design and implement safeguards and protocols to ensure that citizen privacy is fully respected. In this regard, it is worth remembering that police officers do not typically search ALPR databases for "non-hits". Rather, they seek "hits", and if during the course of an investigation a particular license plate must be investigated, that license plate is considered a "hit". Furthermore, all jurisdictions should have policies in place requiring officers to justify their search of a non-hit collected by ALPR similar to policies involving any other police action during an investigation.

In conclusion, considering the issues associated with capacity, efficiency, and privacy with the current practices of ALPR jurisdictions in Europe and North America, and the potential benefits of ALPR data assisting in other investigations, it would seem that a most appropriate period for retaining ALPR data is one year. This would ensure that servers do not need to be too large and would not suffer unnecessary slowdowns related to searching massive amounts of data, it would allow ALPR data to assist in other investigations, and the destruction of the non-hit data after one year would serve to alleviate some of the public's concerns over privacy and the broader use of ALPR data for non-driving or vehicle offences.

References

Armstrong, J., Haarhoff, T., McCormick, A.V., Cohen, I.M., Plecas, D., *Auto thieves: Debunking the myth*. Academy of Criminal Justices Sciences Annual Conference, San Diego, February, 2010.

Cohen, I.M., Plecas, D., and McCormick, A.V. (2007). *A report on the utility of the automated license plate recognition system in British Columbia*. School of Criminology and Criminal Justice, Centre for Criminal Justice Research, University of the Fraser Valley. BC, Canada.

Dean, J., (2010). Personal communication with ACPO (ANPR) United Kingdom National Coordinator. Site visit and presentation at Hertfordshire Police Headquarters, Northampton England.

International Association of Chiefs of Police, [IACP], (2009). Privacy impact assessment report for the utilization of license plate readers. Virginia, USA.

International Association of Chiefs of Police, [IACP], (2010). Personal communication with Meghann Tracy, Project Manager, IACP Technology Centre, Virginia, USA.

U.K. Home Office/Association of Chief Police Officers, (2003). *Engaging criminality: Denying criminals use of the roads* (PA Consulting Group).

U.K Home Office RDS, (1999). *Illegal parking in disabled bays: A means of offender targeting*. As cited in: U.K. Home Office/Association of Chief Police Officers, (2003).

Appendix A

Retained ALPR Used Successfully in Investigations

This list is a collection of samples from both the United Kingdom and the United States. These cases were selected to illustrate the use of captured plates in assisting investigations. This list is not exhaustive. All 43 forces within England and Wales (UK) were included for the sample of cases, whereas only 4 states were selected for the compiled samples. Note that the selection of cases from those four United States (Ohio, California, Idaho and Arizona) did not consider all jurisdictions within those states, and not all offence categories were provided for comparison.

United Kingdom

Description	Number of Cases
Burglary	13
Counterfeit	
Goods/Copyright	2
Drunk Driving	1
Drugs	21
Firearms	7
Fraud	6
Kidnapping	5
Knife Crime	1
Money Laundering	5
Homicide	19
Miscellaneous	2
Offensive Weapon	2
Organized-Crime	2
Persons-at-Risk	7
Road Death	3
Robbery	9
Sex Offences	1

United States

Description	Number of Cases
Burglary	1
Counterfeit	
Goods/Copyright	1
Drunk Driving	
Drugs	
Firearms	1
Fraud	1
Kidnapping	2
Knife Crime	
Money Laundering	
Homicide	11
Miscellaneous	1
Offensive Weapon	
Organized-Crime	
Persons-at-Risk	
Road Death	3
Robbery	2
Sex Offences	

Terrorism Theft	4 7 Total 117	Terrorism Theft	1 Total 24

United States

The following are a sample of cases from four of the United States. These cases are used to illustrate the success of using ALPR technology for investigative purposes. This list is not exhaustive as many other policing jurisdictions within Ohio, California, Idaho and Arizona were not considered for the sample.

Ohio, USA Homicide *Commentary*	In the summer of 2008, the Cincinnati Fire Department was called to a report of a fire at an apartment building. Upon arrival, it was discovered the fire was set deliberately to cover and destroy evidence of a double homicide of a prominent retired doctor. As the CPD began to process the scene, much of which was damaged, a relative of one of the victims noticed the victim's vehicle was missing. After confirming the information, a notice was sent out to the entire county. A CPD officer operating an ALPR unit at the time recalled possibly seeing a vehicle matching the description an hour or so earlier. He immediately returned to the district and loaded the images from his vehicle into the BOSS database. Within minutes, investigators had the vehicle's image, which was printed and distributed to all available officers, as well as its recent location. Shortly after officers began canvassing the area, the vehicle was located with two occupants. This was the lead and the break investigators needed. By quickly locating this vehicle, key evidence was preserved, giving investigators valuable information they likely would have lost had the vehicle been located hours or even days later. With this lead and additional investigatory work, the suspect was charged with 11 counts including aggravated murder, aggravated arson, murder, aggravated burglary, and aggravated robbery. He is currently awaiting trial. In this case, the ALPR system had clearly helped in taking a very dangerous man off the streets. Any agency considering ALPR systems should look at this case to help justify the value of such a system. Although it is easy to place a value on recovered fines and stolen vehicles, it is important to consider the value of staff hours saved through more efficient investigations and the value of promptly locating and preserving evidence. **Cincinnati Regional Automatic License Plate Recognition Technology Project* *By Captain Russell A. Neville, Information Technology Management Section Commander, Cincinnati, Ohio, Police Department*

Arizona, USA Homicide Burglary	Vehicle of interest related to a homicide. The plate was run against the ALPR system and found to have been captured 2 times in 60 days. The information of the vehicle's location on those days of the plate being captured was helpful in the investigation of the homicide. Locating a vehicle of interest related to a burglary. The link to the vehicle allowed for the suspect to be located via his vehicle and subsequently arrested for the burglary. The data was within 3 months, but the information in the database was spaded for 6 months of reads. **Personal communication with Tucson Police Department*

California, USA Homicide Armed Robbery	On December 2nd, police officers took a missing person report. The family gave information on a potential suspect, and also gave the missing persons license plate, as she was last seen driving it that morning at 0500 hrs. The vehicle was checked in several law enforcement agencies databases and was reported to have been "read" at about 2130 hrs the night after. That information, coupled with the picture the ALPR had taken, was relayed to the Detectives. Detectives responded and located the vehicle very quickly. Unfortunately, the victim was in the vehicle, and was deceased, probably prior to the plate being "read" by the ALPR unit the night before. Detectives were able to locate and arrest the suspect, who was still at the location, before he was able to dispose of the victim's body and evidence. Had ALPR not been deployed and scanned this vehicle, the suspect may have been able to dispose of the evidence and possibly evade arrest. On 09/09 an assault with a deadly weapon and robbery took place. Two male suspects attempted to rob a female victim. During the course of the robbery one of the suspects shot the victim in the chest, she was only able to remember the last 3 numbers of the suspect vehicle license plate (917). Using the ALPR database Detectives were able to find a Chevrolet Camaro with the plate of 3XXXX7 that had been in the vicinity of the crime over other time periods. The victim positively identified ALPR "read" as the suspect vehicle, which gave the detective an investigative lead to identify the suspects.

California, USA Armed Robbery	Detectives were actively working a series of recent strong armed robberies where (2) suspects were approaching female victims walking on the street and pulling their gold chains and jewelry off their necks. A witness was able to obtain the vehicle license plate (XXXXXX). Detectives ran the license plate through the ALPR database and discovered the vehicle had been parked in a particular area and were able to follow-up with the investigative lead.
Fraud	United States Postal Inspectors were able to capture a bank fraud suspect with it with the assistance of Long Beach PD who accessed the ALPR database. The suspect's vehicle had multiple reads and assisted in the location of the suspect who was located and arrested.
Theft	A Motor Deputy was away from his motorcycle when his helmet was stolen from his motorcycle. Through the investigation, an eyewitness came forward and provided a license plate of the vehicle in which two persons got into after taking the $600 helmet from the motorcycle. Unfortunately, the license plate was incorrect. Detectives were able to take the license plate information and check it using only a partial plate information search in the ALPR database. A vehicle match was made and a photo line-up of the registered owner was shown to the witness, who made a positive identification. Detectives went to the address of the read, "which is not the address of registration on the vehicle", and located the vehicle parked in the back yard. The suspects were arrested at this location and the helmet was recovered.
	After being forwarded a license plate number from one of the robbery victims it was originally thought to be related to a past robbery, but found out the plate was related to an additional report the victim made regarding the passing of a counterfeit $100 dollar bill. The license plate was checked through DMV, which was registered in another area, with a female owner that was considerably older than the suspect. Believing that someone else other than the registered owner was probably driving the

Counterfeit	vehicle in my area, the plate was checked against the ALPR system. It produced (16) reads. On two of them the vehicle was parked at the Registered Owner's address, but the (14) most recent reads showed the vehicle parked at another location in the area. Both addresses were obtained and were run the through various systems, ultimately coming up with (4) possible matches to the general description of the suspect, who passed the fake bill. After preparing photo line ups the suspect was identified.

California, USA Homicide Homicide	Five people were shot by gang members using an AK-47 in Compton. Two victims were pronounced dead at the scene and the other three were transported to local hospitals for serious, but non-life threatening gunshot wounds. The suspects fled in a black SUV and a tan sedan. The tan sedan was the shooter's car and also had the AK-47. After the shooting, the tan sedan was seen fleeing the scene by a surveillance camera located on top of Compton Courthouse. Homicide Detective's investigation yielded a license plate of the tan sedan (5XXXX00). Homicide Detectives gave the license plate to Major Crimes surveillance team but could not find the car using normal police investigatory tools and all leads were exhausted. Detectives then checked the ALPR database and learned the car was scanned in a specific area of Compton on a previous occasion. Detectives were able to take this investigative lead to move forward with the investigation. Detectives had a partial license plate they acquired in a homicide investigation of 5___426 with a "X" somewhere in the plate. The vehicle description was "newer Silver colored Mercedes Benz 4DR", nfd. The ALPR database was checked and had (717) returns of reads with different combinations. The photos were all compared and a very close match of the vehicle, now with a completed plate was then identified. The vehicle is registered to Enterprise Rentals but it was clear that there was a DMV registration tag in the rear window. It was believed that the vehicle was recently purchased but not yet registered. The suspect in this case was identified and arrested based on the information from the ALPR database. There was a call with "shots fired" at a night club. Deputies learned that (2) male Hispanics were refused entry to the bar because one had a gun.

Firearm	One of the suspects started to pull out his gun, as the security guard hit him, while retreating into the nightclub. The suspect fired two shots at him and then fled in a Chevy truck, red, with a partial license plate of "XX**000. This partial license plate information was checked in the ALPR database. The search identified a partial plate of "XXXXXX." This information was relayed to deputies, who then went to the Registered Owner's address and found the truck parked in the driveway. The suspect was detained pending a field show-up and positively identified as the shooter. When the suspects' wife was contacted she directed deputies to a gun (.25 auto) the suspect had come into the house with just prior to deputies arrival at the house. A subsequent door knock led to the second suspect being detained. Both suspects were arrested.

California, USA Homicide *Commentary*	A person was found dead and his vehicle was missing. It was entered into the system as stolen but after checking our ALPR system, we had a "read" from our fixed ALPR camera on the day after the victim was supposedly killed. We were able to locate additional surveillance video based on the ALPR data of the possible suspect using the ATM. **Personal communication with Sgt. J. Gaw LASD/Technical Services Division* *"ALPR from PIPS Technology is generating incredible results that go far beyond the recovery of stolen vehicles, which is the most commonly discussed benefit of the technology," said Sgt. John Gaw of the LASD ASAP Unit. "The recovery of stolen vehicles, while important, is only the tip of the iceberg when it comes to the use of ALPR. The data collected by the system is incredibly valuable for investigations and has helped us in many cases."*

California, USA	John Doe, 41, was arrested Friday on suspicion of kidnapping for sexual assault, and faces multiple felony charges that could send him to prison for life if convicted, LAPD Deputy Chief XX said. Doe is accused of targeting young girls who were walking alone and enticing them into apartment buildings where he tried to molest them. The charges stem from four separate incidents involving girls in L.A.'s Mid-City area. The attacks date back to February 2008, with the most recent occurring in November. In that incident, police say, the suspect confronted a 10-year-old girl who was walking to school and lured her into an apartment

Kidnapping/ Sex Offence	complex. Police say he attempted to sexually assault her on the roof of the building, but the girl pushed him away repeatedly and he fled. LAPD's sex crimes unit was able to crack the case of the "spiky-hair suspect" by employing the latest in high-tech policing methods. Detectives enhanced video from a security camera to study the suspect's car after an abduction and determined the vehicle's make, model, color and year. Investigators then generated a list of more than 1,700 potential license plates and determined which belonged to vehicles registered in the area where the crimes occurred. **latimes.com* *http://www.latimes.com/news/local/la-me-spikey-hair3-2010feb...* *Richard Winton* *February 3, 2010*

California, USA Sex Offence Homicide Escaped Offender MISC	A serial rapist in South Los Angeles approached female pedestrians and forced them into his vehicle at gunpoint. A victim obtained a license plate number and provided police with a vehicle description; however, the address for the registered owner of the vehicle was no longer correct. With the help of Federal Signal's ALPR Back Office System Software (BOSS) by PIPS, investigators pinpointed prior vehicle sightings, which led them to the suspect's workplace. The employer provided a cell phone number for the suspect, which enabled police to locate the suspect and make an arrest. A shooting left one victim dead. Witnesses provided police with a partial license plate and vehicle description. A query of this data in the Federal Signal BOSS system provided investigators with a full license plate number which enabled them to identify the suspect. Surveillance was established on the suspect's address, and the suspect was in custody less than 24-hours after the shooting. The suspect was also wanted in connection with three other homicides. January 10, 2010 – An officer was on the lookout for a grey, 2005 Audi with Nevada plates. He entered the plate number into his patrol unit's ALPR system and located the vehicle travelling south on Highway 95. The occupants of the vehicle had been aiding a prisoner escape from the nearby minimum security institution. Both occupants were arrested. **Stephens Media Group: Gina Good.*

Homicide/ Kidnapped	San Diego – suspect kidnapped and murdered 2 young girls. The suspect was captured on the ALPR system 7 times which allowed for him to be placed in the area where one of the girls was kidnapped. The hits were over one year old when they began to investigate him. **Personal communication with Escondido PD – Traffic Division*

Idaho, USA Homicide	Recently (2010), the Federal Signal PIPS Back Office System Software (BOSS) provided valuable intelligence that aided in a homicide investigation. Captain X noted, The suspect in this investigation had claimed to be at home during the time of the crime, but using the data in BOSS we were able to place him on a nearby roadway near the time of the murder. Aided by this information, the suspect offered a confession.
Robbery	The ALPR system identified a suspect in a string of snatch and grab robberies at a local retail establishment. Captain X continued, querying our ALPR network, we were able to look for vehicles in the area at the times of these robberies and identify one common vehicle that appeared around the times of all of these incidents and also matched the vehicle description. We were then able to make a positive identification on the suspect, link him to a string of similar robberies in another state, and make an arrest.
Commentary	*"The technology has been a tremendous benefit for the region. We are better able to identify stolen vehicles at least half of which are linked to some other crime, and often involve recoveries of narcotics, weapons, burglary tools and other paraphernalia used in criminal activity. While this is an important aspect, the greatest benefit perhaps is the collection of data for use in our investigations".* Captain J. Haug (Post Falls, PD) **PIPS ALPR Network Protecting Idaho* *©2007 PIPS Technology. A Federal Signal Company*

United Kingdom

This collection of sample cases originates from all 43 forces in England and Wales in the United Kingdom. These cases were selected to illustrate the successfulness of ALPR retained data in aiding investigations. This list is not exhaustive. In 98% of these cases, the ALPR/ANPR data was less than 12 months old.

This collection of cases was provided by John Dean, ACPO National ANPR Coordinator.

Metropolitan Burglary	On 5/X/XX a vehicle was seen to turn off sharply on approaching an ANPR Stop site in MPD. It had activated the system as a possible cloned vehicle. The driver was arrested for failing to stop and for theft of the motor vehicle. Upon examination it was found to be on false plates. The driver is believed to be involved in burglaries and a knife point robbery. Charges are to follow.
Staffordshire Burglary	On 9/X/XX a Staffordshire Police Road Crime Team car equipped with ANPR Recorded a `hit` on DVLA database. The driver tried to park the vehicle to avoid detection. On checking the driver's details he was found to be wanted for 2 burglaries, the first on licensed premises on Christmas Eve and the second on a bookmakers premise on New Year's Eve when he was involved in a struggle with the IP as he left the premises. The offender was part of a team involved in commercial burglaries throughout Stoke on Trent Division.
Hertfordshire Burglary	ANPR officers in Watford stopped a Vauxhall Omega motor vehicle as a result of an ANPR flash that the vehicle had no registered keeper. Further enquiries conducted by the officers, from the ANPR unit established that there was no insurance in force in relation to the use of the vehicle. The driver gave false identification and was arrested under S24 Pace in relation to the No Insurance matter. A short while later, the arresting officers were advised of the correct identification of the offender, revealing that he was wanted for a total of 11 Burglary offences in several force areas since 2000. As a result of the interviews, the offender admitted a total of 32 Burglaries. 21 of these were within Hertfordshire. All of the Burglaries involved the offender (and others) distracting staff within Newsagents and Off Licenses whilst cigarettes were stolen from store rooms. He was charged with 4 Hertfordshire offences and signed a TIC schedule in relation to the other offences.

Lancashire Burglary	Arrest of professional commercial premises burglar. A male was seen entering office premises at Walton Summit Industrial Estate, near Preston and was disturbed rifling through desk drawers. After being challenged by staff he made off into the estate. Local patrols and ANPR officers who where nearby attended the scene and the male was detained by the ANPR team along with his car which was on false plates and included a burglars kit in the boot. The male is a well- known Merseyside target and often targets the South Ribble area. On interview he admitted 5 commercial burglaries on the estate and going equipped to steal.
Hertfordshire – Burglary	A local Golf Club was hit last weekend to the tune of £23,000. Investigation by the golf club secretary (CCTV) and staff led us to check a vehicle seen after two Eastern European men called in last Saturday to ask about green fees. PNC was updated that week with a related marker and there was a hit at Port of Dover later in the day. Vehicle was already on the ferry ready to depart to France. Three men were arrested and golf equipment identified from the Hertfordshire Golf Club and also Whipsnade and Chartridge Park Golf Clubs. So three Polish males have been charged with our burglary and handling stolen goods from the other two golf clubs. Because of ANPR the three males were remanded in custody. One of which is wanted on an International arrest warrant from Warsaw.
CMPG Burglary	ANPR M6 N/B Jct4a-5 on vehicle where registered keeper was wanted for an assault in July. Vehicle stopped M6 J7. 1 Female in custody to Thornhill Rd. ANPR activation on stolen Renault Megan, stolen via a car-key burglary in Telford during the early hours of 7/X/XX .Vehicle activated cameras Jct12-13North. Vehicle followed on camera and sighted by patrols at Doxey. Vehicle then followed while resources were positioned in order to conduct a re-enforced stop. The offender immediately alighted from the vehicle and attempted to run from the scene but was detained by officers following a struggle. Subsequent enquiries revealed that the prisoner was from Manchester, had previous convictions for attempted murder/aggravated burglary and was wanted by GMP for burglary.
CMPG Burglary	ANPR hit, M6, vehicle involved in a possible abduction last night in Birmingham City Centre, officers found vehicle and upon the instruction of F1 OCU the four occupants were arrested. One person arrested for an aggravated burglary after an ANPR activation on the A38M. The driver of the vehicle was found to be wanted by Cambridgeshire Police for

	burglary and serious assault earlier in the evening.
Lancashire Burglary	On 3rd July, 0X a male was arrested in a motor vehicle which had been circulated as wanted a short time earlier as the occupant was responsible for a burglary at a local golf club. The ANPR cameras had captured an image of the vehicle travelling towards the golf club approximately an hour prior to the circulation message. The details were passed to the ANPR team who stopped the vehicle on its return route. The driver was arrested and all property recovered. He was also wanted for another outstanding burglary and for a recall to prison.
South Yorkshire Burglary	In January, 0X at Doncaster a Vauxhall Vectra car passed a police vehicle equipped with ANPR whilst the police officers were dealing with a separate vehicle seizure/drugs search. On returning to the police vehicle some minutes later, the officers reviewed the hits during their absence. A marker for number plates was shown on screen ie stolen from a Ford Mondeo. The image was checked and the vehicle bearing the VRM appeared to be a Vauxhall Vectra. The ANPR team searched the area surrounding the town centre and located the Vectra car parked and unattended near to the central police station. It was a stolen vehicle on false plates. The driver was arrested on suspicion of theft of the vehicle, burglary and theft of the VRM plates.
Thames Valley Burglary	During early April, 07 officers used ANPR to identify and establish a pattern of vehicles stolen, mainly from Maidenhead, Bracknell and Twyford area, but also from Witney, Woolhampton and Hampshire being driven along specific routes into Reading. As a result a night time operation was initiated at identified static points along arterial routes into Reading which resulted in six stolen vehicles being recovered and six offenders arrested and charged during the initial four nights of the operation. ANPR databases also highlighted vehicles used in burglaries which resulted in a number of arrests. Due to its success, the operation was expanded which resulted in no burglary dwelling being reported across the whole of east and west Berkshire during the first two nights of the second week.
West Yorkshire	Static ANPR cameras are located and operating on M1 northbound carriageway. The server and client PC is sited in HA RCC. This system is capable of sending `hit` information from that location to any ANPR system in the force via GPRS. A tablet PC is taken out on patrol by motorway officers and a laptop connected via the network in the Air Support Unit. The motorway officers receive the full overview image and

Burglary	plate patch on the screen with the information and wait for the target vehicle to pass. It can also be monitored by a supervisor and then intercept units deployed. The system is also used for special operations directed to the officers in charge using dedicated hotlists on the BOF. The system can now send `hits` from any camera to any mobile or static ANPR system or individual PC via GPRS or fiber network. In addition the Air support if on the ground can monitor all `hit` from the motorway cameras and respond as appropriate. The following are recent examples of arrests arising from the motorway site. ANPR site on M1 triggered an alert of a vehicle reported stolen following a burglary in Stockport. The Mercedes S320 car was stopped and one person arrested for burglary, UTMV and Disqualified Driving. On 25th May a `hit` was registered on a cloned vehicle which resulted in the arrest of three persons for UTMV from Leicestershire On 30th May a vehicle triggered ANPR alarm on the same static site, the vehicle had a marker `wanted for theft of cigarettes at Nottinghamshire. The vehicle was stopped and two persons arrested  On the same day a `hit` was registered on a vehicle whose occupants were wanted on suspicion of deception at Rotherham. The offenders were arrested and vehicle seized.
Thames Valley Burglary	Earlier this year the alarm was being monitored on the ANPR system at Slough which saw two stolen vehicles passing through the cameras within an hour of each other, one stolen from Met area and one from the Doncaster area. This resulted in 5 persons being arrested and charged with Burglary, UTMV. Both vehicles had been taken as a result of burglaries committed to gain access to the ignition keys.
West Mercia Burglary	At the morning briefing an overnight car key burglary was highlighted in Bewdley. Research on the BOF showed that the stolen vehicle had passed the Hagley cameras during the night heading in the direction of Birmingham. Further analysis showed that a vehicle with an Information marker was following the stolen vehicle two cars behind. The information marker was very vague and did not suggest that the vehicle was linked to vehicle crime. However, further research conducted by PC Hallam linked the vehicle to a prolific West Mids car key burglar. Analysis of the BOF showed that the suspect vehicle had also travelled west-bound approximately 20 minutes prior to the first offence time. A new ACT marker was placed on the vehicle, explicitly mentioning vehicle crime

	and the car was stopped and the suspect arrested a few days later in West Midlands.
Durham Counterfeit	ANPR Operation cantered on car boot sales. One man was arrested for possession of counterfeit goods. A search of his home revealed a large number of computers and CD/DVD copying equipment together with £5,000. All the property and cash was seized and transferred to Trading Standards.
South Yorkshire Counterfeit	A local intelligence marker lead to arrest of 3 persons for breach of copyright and is being dealt with by customs (large quantity of CD' DVD' & copying equipment)
North Wales Drugs	On 21/X/XX ANPR intercept team stopped a vehicle and arrested the three occupants for possession of Class A drug. Approx £20,000 euros was found in the car. All three charged with –Concerned in the supply of a class A drug.
Cumbria Drugs	On 14/X/XX following activation of a PNC marker on ANPR a vehicle was stopped. On being searched it was found to contain `skunk` cannabis to the value of £70,000. Driver was charged
North Yorkshire Offensive Weapon	On 15/X/XX a Ford Transit van was stopped following a hit from a Durham police database that the vehicle was used to convey illegal controlled drugs. A search of the vehicle did not reveal any drugs but a 900,000 volt taser gun, a prohibited weapon was recovered and the driver who had recently been released having served 7 years in prison, was arrested.
NCS Drugs	Crime Squad sought assistance from an ANPR staff to trace an active team involved in drugs trafficking who had just returned from a trip abroad. It was believed that three vehicles were involved and that they could be driven north along the M1. ANPR was deployed and three specific index numbers were entered onto a database. After 30 minutes the three target vehicles travelling in convoy activated ANPR. Their location and direction of travel were supplied to Crime Squad as a result of which all three vehicles and occupants were searched at a motorway service station. Over £1m worth of Ecstasy as well as other narcotics together with substantial cash was seized. The offenders were charged with Conspiracy to Supply a Class A drug, they pleaded guilty and received 8 year custodial sentences.
Thames Valley	An ANPR deployment on A4010 resulted in a `hit` on DVLA No VEL database in respect of a vehicle displaying trade plates. The two

Drugs	occupants were arrested on suspicion of Possession of Class `A` Drug with intent to supply, Theft of a motor vehicle and Driving whilst Disqualified. 40,000 Ecstasy tablets valued at 3500.000 were recovered from the vehicle. Both the offenders and the vehicle are known to be connected to a major organized crime investigation.
Hertfordshire Drugs	An ANPR unit was given details of a vehicle which had been used in several burglaries from the force's intelligence unit. They put the information into the system and received a hit. They stopped the driver and carried out a search. As a result officers found approximately 12kg of cannabis and £6,000 in cash. A subsequent search of his workplace revealed a further sum of approximately £5,000 cash which was recovered from the safe at the premises. A small amount of class A drugs was then seized at the offender's home address.
Essex Drugs	ANPR Intercept Team deployed on the A13 at Thurrock on the Southend bound track. About 1340hrs, Volvo V70 index ******* activated ANPR due to a PNC information report. Intercept vehicle located subject vehicle on the A13 and caused the vehicle to be stopped. Initially the vehicle stopped, however when the officer alighted the Police vehicle to approach the Volvo it made off. A pursuit then ensued along the A128 and A127 before the vehicle was tactically stopped on the A127. The two occupants of the vehicle were arrested at the scene for failing to stop. Upon searching the vehicle the officer discovered a large white package in an Asda shopping bag (believed to be cocaine with an estimated street value of £100,000). Both males were then subsequently arrested for possession with intent to supply.
West Midlands Drugs	An ANPR operation was being conducted in the Alum Rock area of Birmingham when a 54 plate Rover passed through the ANPR check. The vehicle registered a hit on the Gloucestershire Intelligence database stating that ` the vehicle had been seen outside a local school in the Bristol area apparently dealing in drugs`. The information was some 6 months old. In addition to this there was also a report that the vehicle had set off a GATSO camera and the driver could not be traced. The vehicle was stopped and on searching the vehicle a bag was found in the boot which contained £100k worth of cocaine. The driver a South African was arrested and is currently in custody awaiting trial.
Gwent	During an ANPR operation check at Newport a `hit` was recorded on a local database that a vehicle checked, was possibly being driven by a disqualified driver. The officer who stopped the vehicle established that

Drugs	the driver was not the individual referred to on the local database as being a disqualified driver. Nevertheless the officer carried out checks on the identity of the actual driver and found that there was a number of arrest warrants outstanding for this individual in relating to the manufacture, possession and supply of a Class A drug. He was arrested and is awaiting trial.
Devon & Cornwall Drugs	A PNC information marker put on 30/01/0X 'pinged' during an operation on 04/02/200X, just 4 days later. The resulting stop check revealed that the vehicle was carrying 3 males, all arrested for possession of drugs (cocaine), positive RSA and one passenger was wanted on warrant (value of £6825). The original marker referred to a male who was not any of the arrested persons, but showed that the vehicle was a pool vehicle, obviously used for the purposes of conveying drugs from one area of Devon &Cornwall to another. The vehicle was also seized (no insurance). The originator of the PNC information marker generated it as a result of the vehicle evading police and driving at very high speeds, one month previously.
CMPG Drugs	ANPR Tasking M6Jct5-4a on a Mondeo involved in the supply of drugs. Vehicle stopped M6 j4-3. 1 bag of pills found. 1 male in custody to Nuneaton.
CMPG Drugs	ANPR One person in custody for theft of Motor Vehicle from Tamworth this morning. Also found to be disqualified, handover for staffs. ANPR 2person in custody stopped believing occupant to be wanted on warrants, however following search1kg of Class A Drugs found.
Merseyside Drugs	A vehicle used in drug dealing at Aberdeen was placed on a database for ANPR. The same morning the vehicle registered a `hit` on the ANPR system at Merseyside. The vehicle was stopped and occupants arrested for drugs related offence and charged.
Cumbria Drugs	A Spectrum Van had a hit from the local intelligence database on a car travelling northbound on the M6. The vehicle containing two occupants was stopped by an intercept team at Burton Services, near Kendal. The vehicle was searched and 100 9oz bars of cannabis resin were recovered. Both occupants were arrested on possession with intent to supply. A S18 search was carried out at their home address which revealed further finds including a large quantity of Amphetamine and Cocaine. The arrested persons were remanded on bail.
Hampshire	As a result of an ANPR van carrying out checks on M27 near

Drugs	Southampton a `hit` was registered on an intelligence database that the driver of the car subject of the activation may be concerned in the supply of controlled drugs from China Town in London to Bournemouth. A search of the vehicle revealed a briefcase containing approx £15,000 in used notes. The car, the driver's mobile and cash were seized and he was arrested on suspicion of money laundering. Enquiries with Bournemouth Police revealed that the driver had been charged by them for possession of a large quantity of cannabis the previous month.
Sussex Drugs	A Spectrum van was carrying out ANPR checks when a car registered a `hit` on MIDAS database. Officers subsequently carried out S18 searches on three premises which resulted in the seizure of crack cocaine with a street value of £10,000 and £1,000 in £20 notes. Two males were arrested and charged with Possessing a Controlled Drug With Intent To Supply. They are currently on bail awaiting a Court appearance.
Hampshire Drugs	A patrol vehicle equipped with a rear facing ANPR camera registered a `hit` on the car travelling behind it on the MIDAS database. On being stopped the driver, a Vietnamese male admitted to No Insurance and the car was seized. He was unable to produce any identification and was arrested. On being searched he was found to possess £1612 which he could not account for. Identity checks revealed the driver was wanted by Shirley CID for involvement in the production and cultivation of cannabis. A S.18 search was carried out at a temporary address linked to the driver which revealed a fully active elaborate cannabis factory. The driver was subsequently charged and the operation resulted in the arrests of three other Vietnamese males who visited the premises. They are now due to be deported for being in the country illegally.
Essex Drugs	A fixed site ANPR camera at Dartford river crossing registered a `hit on a single vehicle Hot List. An ANPR intercept team acted on the intelligence, stopped the vehicle and seized in excess of 30K of cocaine and heroin. Offender charged with Possessing a Controlled Drug with Intent To Supply.
Essex	As a result of an ANPR Activation at Dartford River Crossing, the ANPR Team intercepted a Land Rover Discovery flagged with Intelligence that it was suspected to be bringing Class A drugs back from France to the Midlands and North Wales areas. With the assistance of air observation, the Land Rover was intercepted at X Street, Brentwood. The driver remained co-operative, and claimed that he was merely travelling back from France having been on a fishing trip.

Drugs	The vehicle was loaded with rucksacks, tackle boxes, and fishing rods. The driver, Alan XXX from North Wales, was detained with his vehicle for a search under s.23 Misuse of Drugs Act. On searching the vehicle at a police station, two of the rucksacks were found to be packed full of carefully wrapped rectangular blocks of white powder, and XXX was arrested on suspicion of Possession with Intent to Supply Class A Drugs. The packages were subsequently confirmed by FSS to be 28kg of Cocaine and 33kg of Heroin (with an estimated street value in excess of £2.5 million). XXX appeared at Basildon Crown Court where he pleaded guilty to 2 charges of Possession with Intent to Supply. He was sentenced to 10 years imprisonment for each offence (to be served concurrently), with an additional £3000 Confiscation Order.
Essex Drugs	The Crime Squad sought assistance from ANPR staff to trace an active team involved in drugs trafficking who had just returned from a trip abroad. It was believed that three vehicles were involved and that they could be driven north along the M1. ANPR was deployed and three specific index numbers were entered onto a database. After 30 minutes the three target vehicles travelling in convoy activated ANPR. Their location and direction of travel were supplied to Crime Squad as a result of which all three vehicles and occupants were searched at a motorway service station. Over £1m worth of Ecstasy, as well as other narcotics, together with substantial cash was seized. The offenders were charged with Conspiracy to Supply a Class A drug; they pleaded guilty and received 8-year custodial sentences.
Essex Drugs	As a result of intelligence received from Greater Manchester police earlier this year the ANPR intercept Team targeted a known drug importer. Upon stopping the vehicle as it entered Essex, using ANPR to locate it, the vehicle was searched and it was found to contain 62 kilograms of heroin and cocaine with a value in excess of £30,000. The driver was arrested and charged with possession with intent to supply a controlled drug.
Dyfed-Powys	A male residing at Powys was suspected of travelling to Liverpool to collect quantities of Cocaine. Thorough research of ANPR data held by both Dyfed-Powys and Merseyside Police enabled police staff to plot specific times and days when the subject was making visits to Liverpool. His vehicle was plotted by way of ANPR on no less than 16 occasions, supplying specific times, dates and locations. On May 17th of the same

Drugs	year the Powys Targeting Team were deployed using the intelligence available. The target vehicle was stopped within minutes and a subsequent search of the vehicle revealed a quantity of cocaine. The driver was arrested and has been charged. This provides an example of how desktop intelligence work utilizing the ANPR back office facility, combined with specific intelligence can lead to cost effective deployment of resources to produce results.
South Wales Firearms	A car was stopped after activating an information marker on PNC that the occupants were wanted following a shooting incident in a Cardiff nightclub. The occupants were arrested for firearm offences, and possession of substantial quantities of controlled drugs and cash.
West Midlands Firearms	During Operation Liability to target and seize unlicensed and uninsured Vehicles in the West Midlands on 8/X/XX a `hit` was recorded on the No VEL database on a Ford Escort van. The vehicle failed to stop and was shortly after abandoned by the driver who made off on foot but was arrested. It was established that the van had been stolen that morning but was not on PNC. On searching the vehicle, officers recovered a canister of CS gas and a sawn off shotgun. The arrested man is a prolific offender with previous convictions for robbery. He is currently in custody awaiting trial.
Devon & Cornwall Firearms	Whilst on patrol on the A30 on 28/X/XX the ANPR camera read a No Tax Marker on a Ford Ka. We subsequently stopped the vehicle and noted a further five information markers relating to offences out of the force area. Due to the male's demeanor we conducted a Section 23 search of the vehicle. We located a locked wooden box in the rear of the vehicle. When asking the male what was in the box he replied a bible. He stated he was not in possession of a key to unlock the box. Having forced entry to the box we located a metal handgun revolver firearm. It seemed to be loaded. Upon further inspection we located a kitchen knife and identified the offender was wearing a wig. Upon arrival at custody the offender was searched. Taped to his wrist watch, officers located the key for the box. The male was also wanted by Thames Valley and Essex Police for a further firearm and offensive weapon offence. He was charged with our offence and transferred to Mid North Essex in relation to their offences.
Humberside	Officers from the RCS stopped a vehicle using ANPR in Hull. The vehicle contained five males, four IC3 males from Nottingham and one IC1 male from Humberside. The officers were quick to acknowledge that the above were evasive and unwilling to talk as they alighted from the vehicle and

Firearms	started to walk away. They were dealt with tactfully initially until the support of the remaining team arrived. On commencing a check on one of the subjects it was established that there were strong links to gun crime in the Notts force area and a vast amount of intelligence on class A drug trafficking. On receipt of this intelligence they were swiftly handcuffed and separated using all the team members to ensure safety and preservation of evidence. As a result of the searches a large quantity of Class A drugs and cash were seized from all the subjects along with offensive weapons. Found on one of the Notts males was a Brocock handgun with live rounds within the chamber. They were all arrested re firearms offences / poss W/I supply / money laundering / offensive weapons. All appeared at Hull Crown court 19/X/XX and received a total of 22 years sentencing - for the Notts male with the gun his sentence consisted of 5 yrs for drugs offence, 5 yrs for possess firearm and 3 yrs for possess ammunition.
Merseyside Firearms	A vehicle was stolen at gunpoint in the Lancashire area and circulated to Merseyside. An ANPR Sgt was viewing the Back Office browser whilst carrying out administrative work and a couple of hours after the armed robbery the vehicle registered a `hit` on ANPR in the Merseyside area. The Sgt informed the control room and the ANPR monitoring officer who began looking for the vehicle on the city's CCTV systems. The vehicle the registered `hits` at two further fixed sites within Merseyside and it was eventually traced on CCTV. ARV's were deployed at full response but before they could intercept the target vehicle was lost on CCTV. Following a search by officers the vehicle was found unattended in a street and was monitored by plain clothes offices. When a male returned to the vehicle he was arrested for armed robbery. The arrest took place only 4 hours after the offence occurred in Lancashire. A female was also arrested for the same offence.
South Yorkshire Firearms	A Vauxhall Astra car passed through an ANPR check at Sheffield and the cameras had difficulty reading the rear VRM plate due to symbols added to it in an effort to frustrate the technology. The vehicle was followed/stopped and driver arrested for Disqualified Driving, Obstructing a Police Officer, Possessing an imitation firearm, no

	insurance and wanted on warrant. The vehicle was seized and it was established that the driver was suspected of being involved in a theft/robbery at Maltby. The intelligence was forwarded to the central robbery squad.
South Yorkshire Firearms	A vehicle registered a `hit` on the No VEL and PNC information databases during an ANPR check at Rotherham. The vehicle was searched and the following was recovered: forged VEL, imitation firearm, stolen police equipment and a knuckle duster. All three occupants were arrested and charged and the vehicle was seized.
Bedfordshire Fraud	A Mercedes car was stopped as a result of a hit on `stolen vehicle` database ANPR. The driver who was accompanied by a 15 yr old girl produced a driving license, credit cards to support his identification. He provided false details and was arrested. On being searched 9 different credit cards were recovered. It transpired he was wanted x 4 recall to prison, wanted for indecent assault on 14 yr old boy, wanted for breach of court order and Sex Offenders registration order. The offender was handed over to Hampshire to be processed as he was on the force's ` most wanted` list.
Northumbria and Sussex Fraud	A routine deployment of ANPR on A.24 resulted in a `hit` on the No VEL database. The car was stopped and other traffic offences were disclosed which resulted in the arrest of the occupants. Whilst in custody it transpired that they had been on the run since 1999 for offences of theft and fraud. Subsequent enquiries led to the offenders being charged with 4 counts of theft at Northumbria together with 276 TIC`s and 2 counts of theft at Sussex together with a further 300 TIC's. - a total clear up of 582 crimes.
West Mercia Fraud	A car on the A435 activated ANPR in relation to intelligence that the occupants may use stolen/forged cheques. A search of the vehicle revealed 20 forged cheques and the three occupants were arrested. The investigation resulted in the recovery of two high value vehicles. This led to a NCIS investigation leading to a further recovery of several other vehicles with total value in excess of £200,000
CMPG Fraud	ANPR M6 N/B J4a-5 on stolen Audi A3. Vehicle stolen by fraud. Vehicle stopped A38 into city. 1 male in custody to Steelhouse Lane.
Durham	ANPR team stopped a car containing 3 Romanian males following

Fraud	activation of MIDAS database for No Insurance. All three had valid passport identification. Inside the car Officers found 2 R Mobile phone cards and a ground down knife. The vehicle was seized. Subsequently POLSA stripped down the boot area of the vehicle and found a skimming device in respect of which the Romanians had not had time to download the information. On returning to re-claim the seized vehicle all three were arrested and charged with possessing articles to be used in connection with fraud. One had a false passport and was wanted by Met for over 12 months and all three individuals were wanted by various Forces around the UK for theft and fraud crimes.
Dorset Fraud	Serious Fraud: An investigation of ANPR data for the Commercial Crime team (who had almost exhausted their enquiries) listed over 600 vehicles which travelled up the A338 in a specific time frame to enable them to narrow down a list of suspect vehicles used by a nominal involved in defrauding a London casino for £13,000 on 18/X/XX. All that was known was the vehicle type. From this list 3 possible vehicles were identified and further local and national ANPR Back Office (BOF) checks then showed images and times of one of the vehicles which linked both the nominal and vehicle to this and a further series of crimes for matters concerning retaining wrongful credit, theft, transferring criminal property, fraud by false representation and offences against The Identity Card Act. This vehicle was used on numerous occasions when committing high value frauds for which he has now been charged. Information gained is assisting in proving the offences at court and will assist in identifying other offenders who have not to date been apprehended. He was remanded to Bournemouth Crown Court and had a Preliminary Hearing. Without ANPR the link to both nominal and vehicle at the crime locations could not have been proved. This case is sub justice.
Bedfordshire Kidnapping	A 17 year old Asian girl was abducted by two men and was known to be detained against her will in a dwelling on a large housing estate. There was a tactical deployment of ANPR supplied with the index mark of two vehicles used by the kidnappers. One of these activated ANPR and was followed to reveal the address of the house where the girl was being held. A firearms team was deployed. It safely rescued the girl and two males were arrested for kidnapping.
CMPG	ANPR hit, M6, vehicle used in a kidnap earlier in the day at Avon and

Kidnapping	Somerset. Vehicle stopped and two male occupants were arrested. Vehicle seized for a full SOCO examination. Handed over to A&S.
North Wales Kidnapping	An unmarked mobile was conducting ANPR check at Barmouth when the operator was alerted to a PNC marker that the vehicle had been stolen and was containing a possible missing person from the Shrewsbury area. The target vehicle failed to stop for the police and a stinger was deployed to bring it to a halt. The driver was arrested for UTMV, Dangerous Driving and Abduction of the missing person and was remanded in custody to await arrival of officers from West Mercia.
Gwent Knife Crime	During an ANPR operation check at Newport, a `hit` was recorded on No VEL database. The vehicle, a taxi was stopped. Whilst one officer was dealing with the driver of the taxi his colleague heard an observations message on the radio for a person responsible for a stabbing. The officer checked the man being carried in the rear of the taxi. He supplied false details and the officer noticed blood on his clothing. His true identity was established and he was arrested for a Section 18 assault, and is currently awaiting trial.
City of London Money Laundering	A vehicle was stopped following ANPR activation for `details required` by another force for GATSO offences. Officers became suspicious when questioning the driver and a search of the vehicle revealed a large quantity of cash. The driver was arrested for money laundering and was investigated by the Economic Crime Unit.
City of London Money Laundering	A vehicle was stopped following an ANPR activation for 'details required' by another force for GATSO offences. Questioning of the driver at the roadside led the officers to form suspicion over the contents of the vehicle. A search of the vehicle revealed a large quantity of cash. The driver was arrested for money laundering and an investigation is now underway by the Economic Crime Unit within the City Police.
CMPG Money	In liaison with Regional Task Force, through ANPR an operation was coordinated to trace and stop a target vehicle and arrest two males on suspicion of money laundering. The vehicle was successfully stopped near Solihull and suspects handed over to Force crime unit for further

Laundering	action. Cash in excess of £60,000 was recovered.
Sussex Money Laundering	A Spectrum Van was carrying out ANPR checks when a vehicle registered a `hit` on the MIDAS database. The driver admitted an offence of No Insurance. Further checks on PNC revealed that the male driver had an alias together with a warning marker for crack cocaine. A PACE search carried out on the vehicle resulted in a quantity of the drug being recovered. Bank books in the car revealed assets of £20,000. A S.18 search at his premises revealed further bank books and hidden cash together with a passport in the name of an alias. The driver was arrested and is currently on bail to answer a charge of Possessing a Controlled Drug with Intent To Supply together with Money Laundering.
Cheshire Constabulary Money Laundering	In a joint operation earlier this year, several key members of a money laundering syndicate were identified as travelling through the Chester area at specific times and dates. With this intelligence the investigation was able to link the nominals to key meetings and gather enough evidence to prove conspiracy in respect of three males involved. Two were arrested at Merseyside and charged a third who had fled was traced to and arrested in the Isle of Man.
North Wales Miscellaneous Escaped Offender	At St. X a mobile patrol registered an ANPR hit on a breath test database in relation to a car. The vehicle was stopped and the driver provided his details which showed no trace on PNC or DVLA databases following checks carried out. The vague answers the driver provided on being questioned resulted in the officer arresting him under SOCAP on suspicion of having no driving license. He was conveyed to custody where he was placed on livescan which supplied his true identity as a prisoner who had absconded from HMP Kirkham on 26/X/XX. He was escorted back to prison.
Durham	A series of racial hatred incidents were being investigated by a local beat officer. The IP was able to supply details of the persons responsible and the registration mark of the vehicle they were conveyed in. A female was arrested and on being interviewed provided alibi witnesses for the material times of the alleged incidents. On each occasion she provided details of specific routes she had travelled on to either to collect her boyfriend from work or to visit a friend. The routes stipulated are

Miscellaneous	covered by ANPR cameras and on checking the system it was proved that she had not travelled along the routes as she had claimed. On being confronted with this evidence the female admitted the offences, she has been charged and is currently on bail to appear before Court.
North Wales Homicide	Following a `hit` on the MIDAS database a car carrying three occupants was stopped. Driver was arrested for supplying false details; front seat passenger was arrested for possession of cannabis. Enquiries in relation to the rear seat passenger revealed he was wanted for Attempt Murder by Cheshire Police having stabbed a male 5 times in the back. He was arrested and transferred to that force. It transpired that the vehicle when checked by ANPR was being driven to a caravan site at Anglesey where the male who was wanted by Cheshire Police, was going to reside in order to conceal his whereabouts.
Suffolk Homicide	An ANPR unit was training staff on the A.12 When a Mercedes car activated the equipment relating to a PNC Database. The marker suggested the driver was connected to a murder together with other members of his family. There was also a marker for firearms as a result of which the car was stopped by authorized firearms officers and the driver arrested which led to other suspects also being arrested. One was convicted of Murder, one for Manslaughter and four for Affray and GBH.
Thames Valley Homicide	Deployment of ANPR on the A.308 resulted in a `hit` on HQ FIB (Serious Crime) database relating to a murder. The female driver was arrested on suspicion of Conspiracy to commit murder. She was the girlfriend of the main suspect wanted for the murder and the vehicle she was driving had been used in the commission of the crime. The vehicle was seized for forensic examination and the offender surrendered himself to police following the arrest of his girlfriend.
Cambridgeshire Homicide	Officers using ANPR equipment at Peterborough recorded a `hit` on the DVLA No VEL database. The vehicle was stopped and on carrying out a PNC established that the driver was wanted for an offence of attempted murder which had occurred 14 months previously. The offender was arrested and is due to appear before court on 1/X/XX
CMPG	An ANPR hit, M42, driver arrested as he was wanted for an offence of

Homicide	threats to kill in Gwent. Handed over to local officers.
West Midlands Homicide	BOF 2.2 was accepted in West Midlands as a development exercise for Anite. Within 10 minutes of going live an enquiry was received from the Murder incident room at Wolverhampton. A suspect was in custody on being interviewed had supplied details of an alibi, stating he was in a different part of the country at the material time when the crime was committed. On checking his vehicle on BOF 2 a number of 'hits' were recorded showing the vehicle to in Birmingham City Centre using the motorway network going to London and then returning. The sightings on the ANPR disproved the suspect's alleged version of events and he was later charged the same day with Murder.
Northumbria Homicide	A murder occurred and from witness evidence it was known that an orange colored transit type van bearing signs similar to `service van` was used to transport the suspects away from the scene. No VRM was known. As the enquiry progressed, all efforts to trace the orange colored van proved negative. It was suspected that the offender may have travelled south in the vehicle following the crime. Knowing that North Yorks Police has fixed ANPR sites on both the A19 and A1 trunk roads, a decision was taken to download all reads data between set parameters. This was estimated at being an hour either side of the estimated time it would take a van to travel from the scene to the ANPR sites. The search produced 3000 vehicles out of which there was only one orange colored van which was registered to an address in the Humberside Police Area. The image captured of the van passing through the ANPR site was viewed and the sign `service van` could be clearly seen on the bonnet. This result was pivotal to the murder enquiry and the evidence produced was key to the case. The ANPR steered the investigation in a direction that without the information, would have taken the enquiry many months to achieve.
Devon and Cornwall Homicide	Whilst on an ANPR operation in the Newquay area a vehicle parked near the check site was subjected to a PNC check. It revealed a PNC Information Marker dated 29/03/07 by Avon and Somerset Police in relation to a Murder. That was committed in December, 06. As a result of the check a male was arrested on suspicion of Murder. The offender was apprehended within 2 days of the marker going on PNC. The offender has been charged.
Cleveland	Intelligence was received to indicate that there was a dispute between

Homicide	two rival criminal networks in Cleveland. This led to one group hiring enforcers from London to travel to Cleveland to shoot members of the rival group. Vehicles were identified for members of both groups allowing the intelligence cell to track their movement with ANPR. This resulted in arrests and those responsible being charged with conspiracy to commit murder.
Essex Homicide	An elderly lady was reported missing by relatives. Three days of enquiries escalated the search to a Force Wide level. A handbag owned by the missing person was found on a beach some 60 miles from her home and the focus of the search moved to that area. Nevertheless searches of ANPR records revealed that a vehicle belonging to a relative of the missing person had entered and left the town bordering the beach in the early hours of the day preceding the finding of the bag. When questioned the relative denied being in the area or of any other person using his vehicle. On presentation of the ANPR reports the relative admitting disposing of the body of the missing person in a wood near to her original address. Two persons were arrested and charged with Murder and associated offences
Suffolk Homicide	ANPR unit was training staff on the A.12 when a Mercedes car activated the equipment relating to a PNC Database. The marker suggested the driver was connected to a murder together with other members of his family. There was also a marker for firearms as a result of which authorized firearms officers stopped the car and the driver arrested, the led to other suspects also being arrested. One was eventually convicted of Murder, another for Manslaughter and four for others Affray and GBH.
West Yorkshire	Operation Geneva was the investigation into the murder of a police officer. Part of a VRN was captured by a witness and described the vehicle as a RAV4. ANPR searches assisted in identifying the full VRN. This was identified as a Hire Car, which was made the subject of observations. This vehicle was recovered by Police the following day and evidence gained from this vehicle implicated one person who is now charged. This also provided circumstantial evidence on other persons and by mid January a team of 3 vehicles had been identified. ANPR & CCTV provided good support that the vehicles were linked, a Silver Rav 4, a Black Mercedes SLK and an N Reg. Toyota Corolla. In total 5 out of the 7 persons involved have been charged. The 3 vehicles used can be placed in Bradford before & after the incident through ANPR and other enquiries. The SIO concludes that ANPR has been a significant factor in

Homicide	identifying very early lines of enquiry in the investigation that enabled those charged with the offences to be arrested before they were able to leave the United Kingdom resulting in conviction at court.
Kent Police Attempt Murder	Information was received from an off duty police officer that a person wanted for attempt murder had recently been seen driving a vehicle on the M25 at Surrey travelling towards Kent. Details of the vehicle were entered onto the Kent Police ANPR system via the Command and Control Interface. Approx 20 minutes later the vehicle activated the ANPR Cameras on entering a shopping centre car park. Observations were kept on the vehicle resulting in the driver being arrested shortly after by police firearm response officers and has been charged.
South Yorkshire Police Homicide	A taxi driver was shot dead at Sheffield. The crime appeared initially to be without a motive and the investigation team had no obvious starting points to commence their enquiries. ANPR was used to provide details of all vehicles in the area of Sheffield where the crime was committed. From this the investigation team was able to identify drivers, locate potential witnesses, and narrow down the search for particular types of vehicles which may have been implicated. Further searches of ANPR by make, model, color, and focused the investigation down even further – allowing vehicles to be located on overview images and CCTV for the corresponding times. This identified a small group of suspects who have since been arrested and charged with murder and conspiracy to commit murder.
Hertfordshire Constabulary Homicide	A male was stabbed to death in a flat at South Oxhey. A part index number and vehicle description was obtained following enquiries, a possible vehicle was identified. The details of the suspect vehicle were searched for via cameras at the nearest ANPR site at Watford. It was established that the vehicle had been captured on the days prior to and post the attack. This led the investigation team to set up an interception operation and as a result the vehicle was stopped and the prime suspect was found in it. It transpired that the victim's blood/DNA was found in the vehicle and three men were subsequently arrested and charged with murder.
West Midlands Police	A man was stabbed to death in Wolverhampton and the offender went on the run. Police were aware of the suspect's mobile telephone details and obtained cell site analysis relating to the telephone. CMPG obtained static ANPR data which corresponded to the cell site data and were able to plot

Homicide	a small number of vehicles which passed through areas of ANPR coverage at the same time as the telephone cell site coverage. This work identified the vehicle which had been used by the offender to make good his escape from the West Midlands up to Lancashire and then onto London. As a result he was arrested and charged with Murder as was his brother in law for aiding and abetting.
CMPG Homicide	Officers investigating a murder had a number of suspects in custody. Alibi evidence was provided by the suspects in relation to their movement around the region on the night in question. Through interrogation of CMPG ANPR data officers were able to corroborate some alibi evidence and refute other alibi evidence.
Merseyside Homicide	A female was reported missing from home in Kirby, Knowsley. Extensive enquiries were conducted which led to the arrest of her ex-husband. He provided an alibi stating that he was out of the area at the time of her disappearance. Retrospective searches were conducted on his Range Rover motor vehicle, the data was used to disprove his alibi, and it was also used to track the vehicle movements up to Scotland around the time of her disappearance. The ANPR information was used in interview, which led to him admitting to murder and disposing of her body in a remote part of Scotland.
Merseyside Homicide	In September Operation Abesis – investigation into two males wanted for Murder in the West Midlands. The two suspects were using premises in the City Centre. ANPR was utilized to monitor the movements of their vehicle, whilst a surveillance team was plotted in and around the City. ANPR enabled the surveillance team to remain covert whilst a containment was put on premises, which led to the arrest of the two individuals for Murder.
North Yorkshire Offensive Weapon	A Ford Transit van was stopped in Scarborough following an ANPR hit from a Durham Police database that the vehicle was used in the illegal supplying of controlled drugs. A subsequent search of the vehicle did not reveal any drugs but a 900,000 volt taser gun, a prohibited firearm, was recovered and the driver, who had recently been released having served seven years in prison, was arrested.
Essex	Phase 1 of Operation 'XX' was carried out from 3rd October to 17th November 200X in Essex. This targeted known gangs of offenders

Organized Crime	involved in high value 'Tilt slashings' and robberies from parked LGVs . It involved officers from the county's Mobile Support Units. Using ANPR systems around the county, in particular intelligence gained from the Dartford Crossing, the operation was co-ordinated to target high powered vehicles known to be used by the gangs. ANPR and Mobile support input into the operation was to supply 3 double crewed pursuit / intercept cars to disrupt the use of the roads of a known organized gang of lorry trailer 'tilt slashers' who had been responsible for a large quantity of this type of offences. There were at least 40 known individuals. They all had intelligence packs compiled on them prior to the operation. 'RIPA' authorities were obtained, as the gang were actively targeted using covert tactics, as some if not all were disqualified from driving or obtaining DVLA licenses. The vehicles they used were all stolen, uninsured, unlicensed and committing very serious acts of dangerous driving if seen by police patrols (e.g. travelling the wrong way down dual carriageways/motorways). Many of the persons involved were PPO's , wanted on numerous warrants for very serious offences or failing to appear in court. The officers armed with good up to date intelligence from local DIU's , criminal analysts, and the FIO employed by Mobile Support , together with powers under Section 165A RTA 1988 as amended by SOCPA 2005 (unlicensed and uninsured drivers) yielded some very good results. A total of 32 persons were arrested for a variety of offences. These were for warrants, disqualified drivers, armed robbery, drink driving, wanted for GBH & ABH and handling stolen goods. A total of 42 motor cars were seized under the no insurance scheme. One estimated to be worth £25,000 to £30,000. Over 60 persons reported for road traffic offences. In excess of 100 intelligence reports were filed by the officers taking part which assisted other local officers in further arrests.

	The second part of this operation is still ongoing at this time, with ANPR providing invaluable in tracking these offenders both in and out of our county.
West Midlands Police Organized Crime	Throughout 2007 the Central Motorway Patrol Group had been assisting the West Midlands police Inquisitive Crime Team in targeting an Organized Crime group involving volume Class A importation. The ANPR work involved supporting covert assets and plotting vehicle movements to provide real time movement information and evidential packages. The overall operation resulted in the recovery of 200kg of cocaine and a number of persons recently sentenced to a total of 120 years imprisonment. An organized crime group has been identified within the West Midlands Region targeting Goods Vehicles for their high value loads. Incidents have included violence towards vehicle drivers including kidnapping. Convoy analysis of ANPR data has led to the identification of vehicles regularly used by the organized crime groups in convoy with stolen vehicles. This has now opened up new lines of enquiry to enable the use of additional covert assets and evidence concerning conspiracy offences by identifying series. CMPG continues to work closely with the West Midlands regional Intelligence Unit targeting a money laundering operation. With the benefit of ANPR data to provide real time vehicle movement data and historic vehicle movement patterns two vehicles were successfully intercepted and two persons arrested with the recovery of £115,000 cash.
Cleveland Persons at Risk	A person with suicidal tendencies was reported missing and was believed to be in his car. A marker was placed on PNC. ANPR search facilities were utilized for sightings of the vehicle during previous 24 hours. It transpired it had travelled past three ANPR cameras, the last read being a few minutes previously. Observations and a search were quickly focused on the identified area, which resulted in the vehicle being traced, and the person reported to be at risk was found safe.
Suffolk Constabulary	Operation Mainstream was the investigation into the disappearance of a 15 girl and her father. This was reported to Suffolk Constabulary at approximately midday on Sunday 10th June 2006. After taking the reports both missing persons were assessed as High Risk

Persons at Risk	on the grounds of a suspected suicide pact and what was believed to be an inappropriate relationship between father and daughter. One of the first actions by the officers dealing with these missing persons was to circulate the vehicle that the father was believed to be driving on PNC. Suffolk Police were alerted to an ANPR activation on a local bridge crossing at 13.41 on the Sunday afternoon. This was the first indication that the two had left Suffolk. Prior to this all police activity had been confined to areas within Ipswich. On Monday 11th June Suffolk Force Intelligence Bureau commenced investigation utilizing the BOF facility and this showed a further ANPR activation within Ipswich earlier on the Sunday. By obtaining photographs from both activations we were able to see that the vehicle has two large aluminum builders ladders attached to the roof rack. These had not been attached when purchased by the father two days earlier. This made the vehicle easily identifiable and allowed us to circulate more effectively within other forces. A third ANPR activation placed the vehicle later that Sunday afternoon on the A23. The ANPR data was backed up by limited communication data, which again suggested their presence in the Brighton area. This information allowed the investigation to direct resources to the Brighton area and to engage with the local force. At approximately 10.00pm on Monday a further activation occurred just outside Bognor Regis. This showed the vehicle was moving generally in a Westerly direction and allowed us to prioritize circulation to the Ferry ports along the coast. It also prompted a concerted response by Sussex Police to that area. With this information and further communication data, officers were able to seek local community assistance within Bognor and to provide the vehicle description. This led to the vehicle being spotted by a local taxi-cab driver and both missing persons being recovered. In this investigation, the use of ANPR allowed was used effectively to track the vehicle across a number of force boundaries and gave the direction of travel. This allowed a more effective and efficient deployment of resources.

CMPG Persons at Risk	A crown court judge commented on the significance of the ANPR data in relation to a witness intimidation trial, where an offender denied any knowledge of the injured party but their vehicle was plotted along the motorway following the injured party through a number of locations within 10 seconds.
South Yorkshire Police– Sudden Death investigation Persons at Risk	Earlier this year a woman's body was found in the carriageway of the M1 motorway. It was believed that she may have jumped from an overbridge to commit suicide. The post mortem confirmed she had died as a result of being crushed by a large vehicle and not as a result of a fall. There were no witnesses to the sudden death. A subsequent search of ANPR data from cameras further along the motorway at the border between South and west Yorkshire supplied a list of goods vehicles that had used the road at the material time. Enquiries were sent to forces where these vehicles were based and the driver of one of the vehicles on being interviewed stated that he had seen the woman lying in the carriageway "waiting to be run over". He turned out to be the only witness traced in the investigation into the sudden death, and would not have come forward of his own accord. Although the vehicle involved in the collision has not been traced, without the benefit of ANPR data there would be no witness to give evidence in respect of a loss of life at the Coroner's Court on a date yet to be fixed.
West Mercia Persons at Risk	A concerned wife reported to the Police that her husband had left at 1100hrs the previous morning to visit Birmingham but had not returned. The ISU officer searched the ANPR system for any activations of the MisPers vehicle. There were several activations for the vehicle in Bromsgrove and Worcester. At 1122hrs the vehicle activated ANPR in Bromsgrove and the vehicle was stopped. MisPer was located safe and well.
West Mercia	Initial reports received of a 24 year old male suicidal missing person from Worcester. It was know that the male had disappeared in his works van but family members did not known the VRM. He subsequently contacted family members to advise them that he was currently driving past Oxford and was heading for London. Two possible VRM's where subsequently located on PNC, registered to the Malvern postcode of his Employers. Both of these VRM's were run through West Mercia ANPR BOF in the hope that one VRM would have significantly more historic activations than the other in Worcester since the missing person and sole

Persons at Risk	driver of the correct van lived in the city and thus enabling us to identify the exact vehicle he would be driving. This search proved to be successful, not only did one VRM have numerous activation is Worcester compared to the other it had also activated a camera in the city around the time that the missing person had called his family claiming to be passing Oxford. This information was promptly passed to officer for obs to be placed for the vehicle which resulted in it being stopped and a safe and well check carried out shortly afterwards in the local area.
West Mercia Persons at Risk	A domestic, caused by a child care dispute, has occurred at a Worcester address resulting in the male offender retrieving a large knife from inside his vehicle. Male has returned to address waving the knife at his son and then thrown his ex-wife across the bonnet of his car who has tried to come between them, holding the knife against her throat and threatened to kill them both. Male's current wife has dragged the male off his ex and forced him back into his vehicle and he has made off from the scene. ANPR maker was placed on this vehicle immediately after the incident was reported and retrospective searches conducted on the vehicle movements. However as the male was visiting the area and currently living in Kent it was anticipated he would be heading for the motorway without passing city camera. A short while later the vehicle has unexpectedly activated ANPR cameras in Worcester City, the location of which was passed by CMC dispatchers to officers dealing. Officers located the vehicle a short while later close by to the camera activation, the male has been arrested for threats to kill.
Hertfordshire Road Death	A fatal road collision occurred on the A1 Trunk road at Stevenage. ANPR units in both Herts. and Beds were tasked with obtaining recurring index numbers of Ford Mondeo vehicles in an effort to locate a potential witness. `Anniversary checks carried out at the location on 3 consecutive Mondays in July by ANPR Unit supplied the required information which enabled the Ford Mondeo to be traced and the driver to be interviewed as a witness to the fatal collision.
Bedfordshire	A hit and run fatal road traffic collision occurred on the A5 Trunk Road on a Tuesday morning. It was decided that an ANPR van deployed at the location on Tuesday - Friday of the following week to create a database

Road Death	of all vehicles that travelled along the road at the relevant time of the collision. This amounted to approximately 2,500 vehicles. Any alerts that were activated from this database were used to create a further database, which in turn was used to create an additional database. The process resulted in the SIO being supplied with the index numbers of 35 vehicles which had been driven regularly along the road at the material time. From the list 9 key witnesses were found as a result of which the offending driver was traced and successfully convicted.
CMPG Road Death	Officers investigating a non-stop fatal road collision had a suspect in custody who denied any association with the offending vehicle. Investigating officers interrogated CMPG ANPR read data and found the vehicle specified on the motorway network approximately one hour prior to the collision. Subsequent examination of the vehicle image provided officers a clear image of the driver, being the suspect in custody.
North Yorkshire Robbery	A vehicle was stopped on the A.1 trunk road following activation of the MIDAS database. He was arrested for No Insurance, No Driving License and supplying false details. Further enquiries established the offender's true identity as he was wanted by Stevenage Police for a £4,000 robbery and was also wanted on a Crown Court warrant in addition to being disqualified from driving.
West Midlands Robbery	A vehicle stolen 7 days previously activated ANPR, which resulted in it being stopped and the male and female occupants were arrested and charged with 4 `Mainline` Burglaries, aggravated TWOC and other offences. The male was also arrested for an armed robbery in West Midlands.
West Mercia Robbery	A vehicle activated the No VEL database on ANPR and was stopped The intercept officer saw that the male driver had a packed suitcase and passport on display in the car. A check revealed him to be wanted for an armed robbery where night-club staff was threatened with a broken bottle, tied up with plasti-cuffs and £8,500 stolen. He was arrested and more plasti-cuffs were found on searching the vehicle.
CMPG	An ANPR hit M5 4A-5 on vehicle ******* occupants involved in theft from

Robbery	store today. Vehicle stopped enquiries ongoing at time of submission. One person in custody, wanted on warrant by Doncaster Police for Robbery.
Cleveland Robbery	Between November, 06 and July 07 there were four cash in transit robberies in Cleveland during which large quantities of cash was stolen. At least two vehicles were used in each crime. Searches of ANPR records enabled the investigation to plot the route of the main vehicle used, which was abandoned at the scene. And also to identify the second vehicle used by the offenders to escape. This led to the identification of suspects in the North West. Arrests and charges followed.
Kent Robbery	An armed robbery occurred at Medway during early afternoon following which a vehicle made off but was found abandoned nearby. Searches of ANPR Database revealed that the vehicle had entered both Kent and the local area earlier the same day. Enquiries led to the identity of another vehicle with a connection to the getaway vehicle and searches of ANPR Data revealed that it frequented the North Kent area. The second vehicle was nominated to the ANPR System via the force's command and control system interface which produced an alert in North Kent area within 12 minutes. The target vehicle was located shortly after and was subject of an armed stop resulting in 3 persons being arrested for armed robbery.
Kent Robbery	A series of three armed robberies took place at different locations and times in Kent. Data from ANPR cameras in the vicinity of each robbery and relevant times was compared, Maidstone 5,000 vehicles, Ashford 13,000 vehicles and Margate 22,000 vehicles. This totaled over 40,000 vehicles and a comparison of the data resulted in two vehicles being identified as being in the areas in question at the relevant time. It was established that one of these vehicles was directly connected to the robberies.
Kent Robbery	A £56M robbery took place in Tonbridge. ANPR was used to track down vehicles used in the Robbery. During the following 24 hours a white transit van was identified as a key vehicle. This vehicle was researched on ANPR capture data and was identified as leaving the United Kingdom through the Channel Tunnel ANPR system. A DVD containing live video and side image pictures of the driver and occupants, together with overview images and plate patches was sent through to the incident room. This resulted in both the driver and the passenger being identified and both were duly arrested in Spain.

Essex Police Robbery	An ANPR unit at Pitsea was activated in respect of a car bearing stolen number plates. It was followed to a Tesco car park and blocked in by a police vehicle. The occupants tried to escape by ramming the police vehicle and were arrested at the scene. At the same time a 'cash in transit' van arrived in the car park. The following items were found in the offender's vehicle: - gloves, balaclavas, ski masks and a machete. It became apparent that their intention was to carry out a robbery on the cash in transit van. A check of ANPR readings showed that the same vehicle has been on the site at the same time the previous week (reconnaissance). Following a search of the arrested persons place of abode, the police recovered an imitation firearm and £18,000 of red dyed cash which was traced to previous robberies. Two males have been charged with attempted robbery and a number of other robberies.
Bedfordshire Sex Offences	A Mercedes car was stopped as a result of a hit on `stolen vehicle` database ANPR. The driver who was accompanied by a 15 yr old girl produced a driving license, credit cards to support his identification. He provided false details and was arrested. On being searched 9 different credit cards were recovered. It transpired he was wanted x 4 recall to prison, wanted for indecent assault on 14 yr old boy, wanted for breach of court order and Sex Offenders registration order. The offender was handed over to Hampshire to be processed as he was on the force's ` most wanted` list.
Metropolitan Terrorism	Following the London bombings an ANPR equipped mobile unit was tasked to carry out a sweep of train station car parks at Luton to gather intelligence. A Fiat car activated ANPR` believed used in firearms offences… please reserve for SOCO` and the vehicle was duly recovered. Later the ANPR staff was asked to carry out back office search checks on two subject vehicles. One of the subject vehicles was shown as a recognition and its exact location was traced to Luton train station car park sited directly adjacent to the spot to where the Fiat had previously been parked. The subject vehicle was found to contain explosives linking it directly to the London bombings, and the Fiat car was found to contain a firearm.
South Wales	An ANPR check at Cardiff on 14/X/XX recorded a No Keeper `hit` on a Mercedes convertible car that was stopped by an ANPR intercept team officer. The occupant claimed to be a securities consultant with a company registered in Florida. The two occupants were arrested on suspicion. During a search of the vehicle a briefcase and laptop was

Terrorism	found. It contained a substantial number of documents with several different but similar personal identities all relating to the purchase of properties in Cardiff and abroad together with details of American Banking Accounts documents with substantial funds. The arresting officer was of the view that he was in possession of a `fraudster's briefcase and contacted Regional Asset Recovery Team who verified that the arrested person had been convicted of fraud and was currently under investigation by RART. The following day RART viewed the content of the briefcase and confirmed that the addresses of individuals, methods adopted and banking account details it contained, was of significant evidential value. As a result of the arrest by the ANPR intercept officer, RART have now achieved a major breakthrough against an individual who has links to International Terrorist organizations.
Central Motorway Patrol Group Terrorism	– Search of ANPR data during the summer of XXXX CMPG were tasked with researching ANPR data in respect of a vehicle linked to the attempted car-bombing of a nightclub at London. Their work quickly identified a second vehicle. This intelligence was supplied to NJU at Scotland Yard and this has been acknowledged as extremely significant in the course and progress of that enquiry.
Bedfordshire Police Terrorism	– Counter Terrorism: Forces were instructed to carry out searches of ANPR data held following an act of terrorism carried out in London. Checks were carried out that identified a Mercedes vehicle entering Toddington Services. A convoy analysis was undertaken and a second Mercedes vehicle was identified following the first vehicle into Toddington Services and then following it out. This intelligence was transmitted to NJU and it directly assisted in both identifying and tracing the second vehicle before it could detonate.
Cleveland Theft	A man was arrested at Hartlepool on suspicion of theft of a £8,000 boat and trailer from Aberdeen in May, having tried to sell it. He claimed to have genuinely bought it from a man in a pub in Dover. In order to disprove the offender's version of events a national ANPR search was requested on 14/X/XX which resulted in a positive read from Lothian and Borders Police on 17/X/XX who had recorded the offender's car travelling north on 8th May and also returning south towing the trailer carrying the stolen boat, the following day 9th May. The footage was of sufficiently good quality to identify the boat as the stolen property and the evidence was sufficient to disprove the suspect's version of events. The prisoner was transferred to Scotland to be charged. (It is estimated

	that 5 boats are stolen every day in UK amounting to approx 1800 such thefts annually, total value in the region of £9m.The majority of these thefts will be by road and the potential to recover more stolen property is evident)
Avon & Somerset Theft	Near Bristol, an ANPR hit on a Ford Mondeo was received with a marker stating that the vehicle was seen in suspicious circumstances in Salisbury near to the scene of a theft of cameras. Vehicle stopped and found to contain a quantity of MP3 players, DAB radios and perfume - along with a well known local criminal who was arrested.
Norfolk Theft	A vehicle being driven along the A.140 at Norwich registered a `hit` on PNC information marker database as having been used in crime at Suffolk. As a result of the car being stopped, a large amount of stolen goods and a caravan stolen from Milton Keynes in November, 06 were recovered and persons arrested and charged.
Dorset Theft	Ferndown IMU received notification from Wiltshire that Jobbing Builders had just attended an address in Wiltshire, and after carrying out poor quality forced the elderly occupant to hand over £2500. Witnesses saw a Land Rover at the scene. Partial VRM 123. A partial VRM search of the ANPR BOF for the IMU revealed a list of 41 vehicles whose index began with 123 seen in Dorset on ANPR including 123 ABC, a red Land Rover. Research linked this vehicle to a nominal from Ferndown who has previous convictions for Burglary, and our Intelligence linked him to possible offences involving elderly vulnerable victims. Wiltshire were informed and he was arrested shortly afterwards. ANPR provided the significant lead and link between the crime and the nominal and supplied photographic evidence allowing this crime to be solved rapidly.
Essex Police Theft	–Making Off Without Payment A vehicle activated an n alarm on ANPR in respect of a driver responsible for making off without payment of petrol that day. The vehicle was stopped, arrested and charged. During the subsequent investigation the offender admitted to 11 other similar offences. Result: One arrest = 11 detected crimes.
Northumbria and Sussex	A routine deployment of ANPR on A.24 resulted in a `hit` on the No VEL database. The car was stopped and other traffic offences were disclosed which resulted in the arrest of the occupants. Whilst in custody it transpired that they had been on the run since 1999 for offences of theft

Theft	and fraud. Subsequent enquiries led to the offenders being charged with 4 counts of theft at Northumbria together with 276 TIC`s and 2 counts of theft at Sussex together with a further 300 TIC's. - a total clear up of 582 crimes.
West Mercia Theft	Report received from IP that they have caught a male attempting to break into their van. The offender made off in his own car and the IP was able to give a partial VRM and description of the vehicle. A partial search carried out on the ANPR provided a likely VRM for the offender's vehicle. A pnc marker was placed on this vehicle resulting in officers later located the car and driver and occupant. 1 male was arrested for TFMV, the other for possession of class A drug.