

**CRIMINALS MAY HAVE THE RIGHT TO REMAIN SILENT, BUT THEY  
NO LONGER HAVE THE RIGHT TO REMAIN UNDETECTED**

**How the proliferation of automatic license plate recognition cameras can  
drastically impact criminal activity in your city**

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The Command College Futures Study Project is a FUTURES study of a particular emerging issue of relevance to law enforcement. Its purpose is NOT to predict the future; rather, to project a variety of possible scenarios useful for strategic planning in anticipation of the emerging landscape facing policing organizations.

This journal article was created using the futures forecasting process of Command College and its outcomes. Defining the future differs from analyzing the past, because it has not yet happened. In this article, methodologies have been used to discern useful alternatives to enhance the success of planners and leaders in their response to a range of possible future environments.

Managing the future means influencing it—creating, constraining and adapting to emerging trends and events in a way that optimizes the opportunities and minimizes the threats of relevance to the profession.

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Imagine yourself as a Chief of Police, City Manager, or elected City Leader reading the morning paper. Which of the following headlines would you rather see: *“ALPR cameras provided critical information in arrest of rapist after vicious attack”* or *“Serial rapist terrorizes the city and continues to elude the police”*. Consider another set of contrasting headlines, and how they might make you feel; *“Police use ALPR cameras to apprehend armed robbers shortly after the crime”* or *“Owner forced to move business to another city after 5<sup>th</sup> armed robbery in 3 months; says police department is inept”*.

In both scenarios, the headlines illustrate the difference between serious criminals being caught early in their crime spree vs. continuing their crime spree undetected for extended periods of time. The latter examples present real reputation risk for a police agency as their inability to solve major crime erodes the public’s confidence.

Fortunately, technology exists today that can largely mitigate the problem of criminals going undetected after perpetrating serious crimes. This impressive technology is called Automatic License Plate Recognition; often referred to as ALPR. When deployed with the proper combination of mobile and strategically placed fixed point cameras, this technology can effectively serve as a vigilant 24-hour a day citywide electronic surveillance system capable of

identifying vehicles at or near the scene of major crimes. Considering that “over 50% of all crime is related to a vehicle, the ability to automate the process of identifying vehicles of interest has immense inherent value”.<sup>i</sup> A robust ALPR system in your city can and will provide your officers and investigators with significant leads to crimes that would have otherwise went unsolved.

To better understand this concept, consider the following scenario as an example of the potential data mining value ALPR systems can create for investigators:

At 10:05 a.m., two fully masked men with gloves enter the Bank of America and commit a robbery at gunpoint. As they flee the scene, a witness sees the car from a distance and describes it to the dispatcher as a blue truck with a tinted rear window but is unable to provide any license plate information. As officers are responding to the scene, a back-up dispatcher immediately queries the ALPR system for vehicles driving west bound through the nearby ALPR equipped intersection of Main and Baseline between the times of 10:05 and 10:15. As the back-up dispatcher effortlessly scrolls through the data showing the photos of every vehicle that came through the intersection, she quickly spots a blue Toyota truck with a tinted rear window, two male occupants and a license plate of 1ROB911.

Believing it to be the suspect vehicle, she further queries the ALPR system for all data related to license plate 1ROB911. The system returns with 45 data points listing everywhere an ALPR camera photographed the vehicle over the past 3 months. With one additional key stroke, she queries the system to map the data and quickly finds out that approximately 80% of the time the truck was photographed at a residence located at 36454 Juniper Ave. Even though the vehicle is not registered to the Juniper address, it appears to be the suspects’ home as the mobile ALPR

cameras have photographed the truck there at many different times of day and night throughout the 3-month period. Officers at the scene are advised of the license plate number and they query the system from the field. The resulting ALPR photographs are shown to the witness from the patrol car and she positively identifies the truck in the photo as the suspect vehicle.

Investigators immediately drive to the address 36454 Juniper, locate the truck, freeze the scene, detain the occupants, write a search warrant, arrest the suspects and recover the evidence including the stolen money. Afterwards, the officers and investigators reflect on how lucky they are to work in a city with a prolific ALPR system as they realize this case would have generated few leads and may well have gone unsolved without it.

With properly situated fixed point ALPR cameras working in concert with mobile cameras, it is easy to conclude that scenario's like this can become a recurring theme. A comprehensive ALPR system is truly a force multiplier, as it requires very little effort or time for investigators to develop very strong leads. Perhaps the best descriptor comes from Motorola Corporation (2006), which notes "it's like having a vigilant, silent partner in the patrol car who is just watching plates and knows which are suspect." <sup>ii</sup>

ALPR offers one distinct advantage over traditional surveillance camera systems in that ALPR data can be readily queried to identify all previous license plate reads in the system. For instance, when investigators are looking for a wanted person who is known to drive a certain vehicle, they simply enter the license plate into the system and it returns with every location the car has been seen by an ALPR camera over the requested period of time. The data includes photographs of each sighting, the date and time of the sighting and the exact location. This information can quickly inform investigators what houses, apartments or addresses the vehicle

frequents and on a relative basis how often it frequents each location. Based on the early morning reads of certain license plate sightings, investigators can quickly develop strong clues as to where the wanted individual sleeps each night and is likely to be found. Traditional surveillance cameras cannot provide this valuable quantitative information and ALPR does it with a few clicks on a keyboard. This information is extraordinarily powerful in most law enforcement settings and can serve as a game changer when used to its full potential.

This scenario is not something way off in the future. The technology is readily available today, although relatively few agencies have established prolific systems to date. Those that have can boast significant successes that will serve as examples of ALPR potential to others. For example; in 2005 The California Highway Patrol developed a system which combined mobile and fixed point ALPR cameras and within the first 21 months they recovered 868 wanted or stolen vehicles worth over \$7 million, and arrested 535 suspects.<sup>iii</sup> The results are powerful and it is appears likely prolific ALPR systems will be commonplace in many agencies in the years to come.

In discussing this reality, LAPD Chief Charlie Beck said “license plate reading technology is here to stay. This is as plain and as obvious a use in policing as the two-way radio was 50 years ago. There’s just no way that this won’t be the future of policing. It’s just too exactly on point”.<sup>iv</sup>

Considering it is generally a small number of people in any given area that are responsible for the majority of the crimes,<sup>v</sup> an effectively deployed combination of mobile and strategically located fixed point ALPR cameras can and will help to identify these serious offenders in a high percentage of cases. These cameras operate 24-hours a day and see and

record far more activity than a patrol officer could possibly see. The value of these cameras is enormous and they do not require additional staffing to monitor them.

### The Current State of ALPR Technology

ALPR technology is currently used in about one quarter of police agencies in the United States. To date, less than 1% of police vehicles nationwide have mobile ALPR systems installed.<sup>vi</sup> An extensive study of ALPR systems at George Mason University found that “weak intensity of deployment, as well as limited data underlying ALPR systems, can possibly dampen effectiveness.”<sup>vii</sup> Unfortunately, the type of limited or experimental deployment commonly used today, generally leads to a corresponding limited success rate. This can lead many law enforcement leaders and officers to seriously underestimate the true public safety potential of this technology when deployed in a prolific fashion throughout their jurisdiction.

Sadly, many law enforcement officers and leaders still view ALPR as simply a stolen vehicle locating system and maintain a limited vision of its full potential. While ALPR works extremely well for locating wanted vehicles, the true value of these systems is found in the data mining capabilities. This is especially true with cities that have prolific systems, which would include fixed-point cameras that cover escape routes used by criminals after committing major crimes. Once police investigators and leaders recognize ALPR can serve as a comprehensive electronic vehicle surveillance system, this should change.

### The Future of ALPR Technology

One thing is clear; ALPR is past the point of experimentation in the law enforcement industry; however, since it was first introduced in California by the California Highway Patrol in

January of 2005, the rate of expansion has been slower than one might expect considering the obvious benefits.<sup>viii</sup> Three primary issues contributing to this are:

- The cost to acquire ALPR systems
- The current and future economic conditions at all levels of government
- The concern for the delicate balance between public safety and personal liberties

A closer examination of each issue will help explain how each will play a smaller role in the coming years.

### Cost of ALPR

Consistent with most technology introduced into the market place, the cost of ALPR systems has trended significantly downward. This is largely due to the increase in competitive market forces and the economies of scale. As demand for ALPR increases, the companies are able to mass-produce the products at increased levels, which make them less expensive on an individual camera basis. This savings is passed on to the market place and the reduction in price creates further increased demand. This is demonstrated by noting the price to equip a patrol car with ALPR in 2006 ranged from \$20,000 to \$25,000.<sup>ix</sup> By 2011, though, the price had dropped to an average of \$18,000. In the next decade, one can envision more accurate, and more compact ALPR cameras which could be installed at a price below \$10,000 level. This reduced pricing would dramatically increase demand.

### Current Economic Conditions

The benefits of this price reduction trend are somewhat offset by the current and short-term economic projections over the next several years. Many police agencies currently rely on federal or state grants to fund these projects; however, these funds may be limited in the future as

the federal and state governments struggle to cope with their enormous debt. The potential lack of grant funding going forward could force police agencies to find alternative funding sources. Possible solutions to consider would include shared costs through a regional approach or private funding through foundations focused on innovative technology projects for public safety.

### Public Safety and Security vs. Privacy

The other major consideration to assess the future of ALPR proliferation is the public's level of acceptance in the trade-off between personal privacy and public safety. Cities that have deployed ALPR for revenue generation, such as vehicle registration violators or parking violators have received much less support from the public. Conversely, when ALPR is used to assist in the apprehension of major criminal offenders, public support rises.<sup>x</sup>

Civil rights groups such as the ACLU have challenged the use of ALPR technology in the courts. Interestingly, the courts have consistently ruled in favor of ALPR. D.J. Solove has done extensive research on the balance of liberty vs. security in the context of data mining. His research concludes that the scale between security and personal liberty is rigged in the United States courts so that security will win out nearly all the time.<sup>xi</sup> This data supports the probability of continued ALPR expansion in the future; however, misuse of the technology or an unexpected change in status of the law relating to its use could always negatively impact future ALPR projects.

### Conclusion

ALPR technology has been carefully vetted and has proven its value as an important tool in the fight against crime. In the short run, the jurisdictions that are able to fund prolific ALPR systems will have a distinct crime fighting public safety advantage over their neighboring jurisdictions that are unable to procure this technology. The difference in the crime statistics

between the “haves” (those that have prolific ALPR systems) and the “have nots” (those that do not have ALPR systems) should ultimately place more pressure on police administrators to find ways to secure this technology to protect their communities. As the regional network of ALPR grows over time, and the data is readily shared between agencies through interoperability enhancements, the agencies that are not participating will find themselves at a disadvantage.

The moral of the story is: if you are a law enforcement administrator, elected city leader or city manager, take a close look to see if ALPR is right for your city. If it is, take leadership action now by developing a plan to ensure it gets acquired. Even if it takes building the system up over several budget cycles, the public safety benefits for your city will last well beyond your tenure and your legacy will be that your progressive leadership made a real difference in your community.

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<sup>i</sup> Federal Signal Corporation (2008, August) *Automated license plate recognition investment justification and purchasing guide*. Retrieved from <http://www.federalsignal.com>.

<sup>ii</sup> Motorola Inc. (2006). *Motorola's Automatic License Plate Recognition (ALPR)*. Retrieved December 26, 2011 from [http://www.motorola.com/web/Business/Products/Software%20and%20Applications/Public%20Sector%20Applications/Video%20Applications/Automatic%20License%20Plate%20Recognition%20\(ALPR\)/Documents/RC-14-2031A\\_.pdf](http://www.motorola.com/web/Business/Products/Software%20and%20Applications/Public%20Sector%20Applications/Video%20Applications/Automatic%20License%20Plate%20Recognition%20(ALPR)/Documents/RC-14-2031A_.pdf)

<sup>iii</sup> Pips Technology, A Federal Signal Company (2006). *CHP releases results of PIPS ALPR*. Retrieved from [http://pipstechnology.com/news/pips\\_in\\_news/chp\\_releases\\_results\\_of\\_pips\\_alpr/](http://pipstechnology.com/news/pips_in_news/chp_releases_results_of_pips_alpr/)

<sup>iv</sup> Govtech (April 8, 2008). *License plate recognition systems extend the reach of patrol officers*. Retrieved December 26, 2011 from [http://www.govtech.com/templates/gov\\_print\\_article?id=99367794](http://www.govtech.com/templates/gov_print_article?id=99367794)

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<sup>v</sup> Hegarty, T (2010, December) *Power Law Distribution and Solving the Crime Problem*. *Police Chief Magazine*, Retrieved November 12, 2011 from [http://www.policechiefmagazine.org/magazine/index.cfm?fuseaction=display\\_arch&article\\_id=2267&issue\\_id=122010](http://www.policechiefmagazine.org/magazine/index.cfm?fuseaction=display_arch&article_id=2267&issue_id=122010)

<sup>vi</sup> McKay, J. (2008, April 8) License plate recognition systems extend the reach of patrol officers. *Digital Communities*. [Electronic version] retrieved from <http://www.digitalcommunities.com>.

<sup>vii</sup> Lum, C. (2010, Sept) *License Plate Recognition (LPR) Technology, Impact Evaluation and Community Assessment*. George Mason University. Retrieved November 13, 2011 from [http://gemini.gmu.edu/cebcp/lpr\\_final.pdf](http://gemini.gmu.edu/cebcp/lpr_final.pdf).

<sup>viii</sup> Pips Technology, A Federal Signal Company (2006). *CHP releases results of PIPS ALPR*. Retrieved from [http://pipstechnology.com/news/pips\\_in\\_news/chp\\_releases\\_results\\_of\\_pips\\_alpr/](http://pipstechnology.com/news/pips_in_news/chp_releases_results_of_pips_alpr/)

<sup>ix</sup> Manson, T.M. (2006, December). Automatic License Plate Recognition Systems [Electronic Version] *Law and Order magazine*. Retrieved from <http://www.policetechnical.com>

<sup>x</sup> Peters, J. (2010, August 12) States eye license-plate cameras as source of cash. *Stateline Daily* (Electronic version) Retrieved from <http://www.stateline.org>

<sup>xi</sup> Solove, Daniel J. (2008) *Data Mining and the Security-Liberty Debate*. University of Chicago Law Review, Vol. 74, p. 343, 2008; GWU Law School Public Law Research Paper No. 278. Available at SSRN: <http://ssrn.com/abstract=990030>