

How New Parking Technologies Help Law Enforcement Fight Crime, Control Traffic, and Boost Revenues

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For police officials, parking is rarely considered in the frontline fight against crime. Yet, in recent decades, parking lots and tickets have figured prominently in several high-profile criminal cases.

During the trial relating to the 1993 World Trade Center bombing, video from the tower parking garage was used as evidence to convict terrorist mastermind Ramzi Yousef. That same year, Aldrich Ames, a CIA agent spying for the Russians, was arrested after law enforcement tracked his movements and parking patterns using his access control card for the CIA parking lot. In 1977, police caught serial killer David Berkowitz, "Son of Sam," who terrorized New York City and killed 6 people in 12 months, after tracking down a parking ticket issued to his vehicle at the time and near the place of one of the murders. Each one of these cases used the parking technologies available at the time to assist in fighting crime.

Today, technologies in the parking industry are revolutionizing parking operations. These technologies are tools that can be used to prevent crime or as evidence after a crime.

Preventing Crime with E-payment

One of the most important technological advances in parking is the movement away from cash payment to e-payment: funds exchanged electronically using computer networks, the Internet, and digital storage systems. Just as the replacement of cash payment with credit card transactions at convenience stores and gas stations helped reduce crime in those environments,¹ the replacement of cash with e-payment in parking facilities is a positive development from a crime prevention perspective.

Increasingly, parking operators are installing payment systems that accommodate credit cards, other cards that carry balances, and even cell phones that access e-payment accounts or possess credit card capability with an electronic chip on the subscriber identity module (SIM) card. E-payment makes the lack of cash available on-site far less attractive to criminals.

E-payment also provides auditing capabilities to track the movement of criminals.

Using Automatic License Plate Recognition

License plate recognition (LPR) is an automated vehicle identification technology utilizing specialized cameras and software to recognize license plates, capture tag images, and transform the numeric and alpha characters on a license plate into a common format data stream. For many municipalities, universities, airports, medical centers, shopping malls, military bases, and corporations, LPR technology is typically used to confirm vehicle access to parking facilities. For law enforcement, LPR is a valuable technological tool for identifying vehicles of interest in crime investigations and for parking enforcement.

In Cincinnati, for example, the police department was able to locate a vehicle, set surveillance, and wait for an armed robbery suspect to arrive—all because LPR technology in the city's mobile systems had captured images of the suspect's vehicle parked on the street. In another example, the University of Kentucky's Parking and Transportation Services (PTS) department installed its LPR system on a parking control vehicle, which locates vehicles that have outstanding parking violations. Within 40 minutes, the system can read more than 2,500 license plates. During one sweep, the system was able to locate 5 vehicles with a combined 15 outstanding parking violations. In the long term, the university has the option of using the system to identify stolen vehicles or vehicles that have exceeded the time limit at time-enforced parking locations.

At several large airports and municipal facilities, law enforcement officials are working with parking operators to use LPR technology to track stolen vehicles and identify vehicles of interest in crime investigations. In these locations, the parking operator gives law enforcement officials access to its LPR databases and, in essence, becomes an extension of the public safety system. As costs for LPR systems continue to decrease,

more LPR systems will be installed, providing new opportunities for parking and police officials to work together to fight crime and improve security.

Other Vehicle Identification Technologies

In addition to LPR, there are several other automatic vehicle identification technologies in use in parking facilities and toll road processing—all with potential law enforcement applications. These include the use of radio frequency identification (RFID) tags, bar code tags, and transponders. Several major universities and the military use RFID to control vehicle access to their parking facilities and track the institution's vehicles as they travel outside the campus or military base.

Wireless sensing devices also are able to perform vehicle recognition (using general size and shape) and aid in revenue generation from parking violations. Combined with accurate GPS data, wireless sensing devices automatically detect and notify parking enforcement officers of unmoved vehicles. They also are equipped with cameras that can take photos of the violations. The city of Fredericksburg, Virginia, had limited parking, which resulted in street congestion, so the city used this technology to manage parking supply and determine when an escalation of enforcement was needed. In this case, violators first received a warning, followed by a ticket with a photo of the vehicle if there was any further violation. Using this device, officers could patrol the same area in 40 minutes compared to the pre-system patrol time of 5 hours. Benefits included an overall revenue increase as well as an additional 4 hours and 20 minutes of law enforcement capability.

Other on-street technologies used to enforce parking restrictions include handheld units, which have replaced pads and pens, and in-ground sensors that can detect how long a vehicle has occupied a space.

Preventing Crime with Better Lighting

Lighting fixtures in parking facilities are universally considered to be the single most important parking security feature. Good lighting deters crime and produces a more secure environment for the public and the operators. As a key component of the security system, lighting fixtures must be reliable and provide ample, glare-free illumination. They must also be able to withstand the elements and be protected from vandalism.

Many parking facilities have replaced incandescent lighting and high-intensity discharge (HID) lighting with fluorescent fixtures to illuminate parking stalls and driving lanes. These lights reduce energy consumption by 30 percent to 85 percent at equal or greater light levels. From a crime prevention standpoint, they have the benefit of instant illumination and remain brighter longer. Coupled with closed-circuit

television (CCTV) equipment, they provide improved color spectrum and contrast.

Each year, more than \$1.5 billion is made available by utilities and government agencies to help offset the cost of energy-saving projects, including those involving lighting. The National Energy Policy Act allows a tax deduction for energy conservation measures that reduce energy demand by 50 percent or more. These and other economic incentives are spurring development of other lighting advances, including light-emitting diode (LED) fixtures. LED technology has the advantage of instant “on,” brighter lighting, longer life than other lamp sources, reduced maintenance, and energy savings. However, LED lighting is one to three years from becoming mainstream in parking facilities because standard construction cannot handle the thermal challenges of LED lights, and the optical design in most traditional fixtures does not maximize LED’s efficiency. Still, once lighting industry experts learn how to capitalize on LED technology, these lights will aid crime prevention in parking facilities.

CCTV for Crime Prevention

In recent years, an increasing number of parking facilities have installed CCTV to monitor pedestrian and vehicle traffic. This technology, which uses fixed or movable cameras, is nothing new for law enforcement officials. CCTV systems have collected enormous amounts of evidence that help solve thousands of crimes each year.² Several important advances in this technology are currently under way in the parking industry, promising improvements in crime investigations, traffic management, and detection of abandoned vehicles and other objects.

Video analytics enable a CCTV system to intelligently determine the subject matter being viewed, rendering it directly applicable to law enforcement operations. This could include vehicle congestion in an intersection, parked vehicles in a no-parking zone, movement or activity in a secure area, and any other situation in which atypical images are captured by the system. This technology also has the ability to track motion in a field of view using parameters such as object size and sensitivity.

Improving Traffic Management

As parking revenue control systems become more sophisticated, facility information can interface with local law enforcement both in real time and in summarized format. This kind of communication is an asset to traffic management as well as to enforcement. For example, as payment processing is accelerated, vehicles flow more rapidly from parking facilities into the streets, affecting traffic organization and street absorption during peak periods. The technology gives police access to infor-

Three Ways to Take Advantage of Parking Technologies

- Get to know community parking professionals. Participate in panels or committees during the design or renovation of parking facilities, especially those that are involved in procurement and installation of parking technologies.
- Become a member of the International Parking Institute (IPI). IPI has a membership category for law enforcement professionals. Learn more at <http://www.parking.org>.
- Read articles about advances in parking technology as well as firsthand experiences of law enforcement officials in *The Parking Professional* magazine.

mation about exit trends and traffic flow, enabling them to better manage traffic. This capability is an asset in communities with sports venues, theaters, concert halls, and other facilities in which high-volume traffic surges as events conclude.

The parking technologies outlined in this article—e-payment, lighting improvements, license plate recognition, video analytics, and wireless sensing devices—yield valuable information that can help police officials prevent crime, manage traffic, and present evidence at criminal trials. Clearly, parking operations by nature are a repository of valuable information that can assist law enforcement officials in all facets of their jobs.

Unfortunately, rarely are law enforcement officials involved in making technology-related decisions when a parking facility or on-street parking is being constructed or renovated, nor are they notified when parking facilities update their technologies—technologies that could have significant law enforcement applications. These are missed opportunities for both parking professionals and police officials.

At the local level, law enforcement officials should be involved in technology-related decisions for parking facilities in their respective communities. The local planning and zoning department can serve as the linkage between parking facilities and the police department. When a new facility is planned, or an existing facility is undergoing renovation, law enforcement needs to be represented in an oversight panel or on a committee.

In a recent example, during the renovation and expansion of Logan International Airport in Boston, Massachusetts, police officials were closely involved in decisions made about the technologies used in the parking facility.

Second, beyond specific collaboration at the local level, it is important for law

enforcement and the parking industry to work together to explore specific ways new technologies enable them to share data and information. The International Parking Institute, an association of parking professionals, and its technology committee are willing resources for police officials, providing a nexus in which information about new technologies in the parking industry is available to benefit law enforcement.

Advances in technology provide an opportunity for parking professionals and police officials to work cooperatively to the benefit of the community at large. Resources exist to share data and information that can help law enforcement prevent and fight crime, as well as manage traffic. By joining forces to take advantage of these new technologies today, law enforcement and the parking industry will be in the best position to seize the opportunities presented by the technologies of tomorrow. ♦

Notes:

¹Richard T. Wright and Scott H. Decker, *Armed Robbers in Action: Stickups and Street Culture* (Boston: Northeastern University Press, 1997), 137–139.

²See Grant Fredericks, “CCTV: A Law Enforcement Tool,” *The Police Chief* 71 (August 2004): 68–74, http://policechiefmagazine.org/magazine/index.cfm?fuseaction=display_arch&article_id=359&issue_id=82004.

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