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# REVOLUTION

## Technology Trends in Parking: 2013

Parking technology: where is it heading? Everyone wants to go faster and be greener and more efficient. The parking industry is incorporating and adapting new technologies to meet the needs of the industry and the public.

### Mechanical to Digital

Over the past decades, parking control systems have transitioned from mechanical, electro-mechanical, and electronic-only to computer-based systems, with access and revenue management software offering central reporting and control of a facility. This offers the ability to provide enhanced functionality and handle scenarios such as credit card in-credit card out, debit cards, etc., in real time. New generations of IP-based addressable "smart" equipment are able to report their operational status and be controlled via Ethernet networks and existing internet infrastructure. These technologies also allow the support and monitoring of multiple facilities across town, around the country, or across the globe. Wireless communications are also playing an ever-increasing role, although reliability can still be an issue.

Another benefit of this digital world is the ability to integrate other technologies and related software programs such as building security, energy management, and others to outside reporting and accounting packages.

### Cash to eMoney

eMoney (electronic payment) is a non-cash payment that is exchanged electronically. It involves the use of a computer network, the internet and, in some cases, stored value systems. This takes advantage of varied and new technologies, with use and acceptance starting in Europe in many cases.

eMoney does have costs associated with processing fees, but generally these are less than cash handling. It is also a more secure payment method with greatly-reduced possibilities for theft over a cash-based system.

The most widely-used media for electronic payment is the credit/debit card. These can be accepted in most locations, even as payment on-the-go with the addition of card readers that attach directly to many smartphones

and use the cellular network for communication to a clearinghouse. This combination allows customers to pay for any good or service anytime, anywhere.

To provide added security, some credit cards are also incorporating electronic chips (contact or contactless) with on-board memory that can be read and written and offers higher security levels.

Mobile commerce, sometimes called m-commerce, is a growing area of technology without a lot of standards yet. The concept is that the smartphone device you're carrying can also be used to make payments for all kinds of goods and services. Most commonly, the device is used as a credential that is linked to a credit card or bank account from which funds are drawn and transferred to the merchant (parking operation). In a few rare cases the charge may appear on your cellular phone bill. Sometimes the payment application is generic and can be used for any purpose, while in other cases the payment is tied to a transaction in parking (such as pay-by-cell). Pay-by-cell merges the phone with contactless credit card and gives you the ability to communicate with devices locally (similar to Bluetooth).

A smartphone can be used to display an emailed barcode that can be used as an access credential or validation coupon. This allows for faster payment processing and greater convenience.

### Long-Range RFID, LPR, and NFC

Access control tags have taken several leaps over the past decades with the creation of RFID (radio frequency identification) proximity cards and readers. With improvements in both tag and antenna technologies, read ranges can be inches or feet depending on the application for standard RFID, or ten to 30 feet for standard AVI (automatic vehicle identification) tags.

Take it a step further up the technology ladder: Long-range RFID transponders are used for electronic toll collection (ETC) in several toll road systems. The EZ-Pass system is used by many states in a consortium along the northeast I-95 corridor. These highway toll tags are also being accepted for payment by some major airports.

Some toll roads have eliminated toll booths in favor of license plate recognition (LPR) systems, which match the tags to owners for monthly billing by mail.

Transponders and LPR are streamlining parking operations. They reduce labor costs, decrease the chance of fraud, and increase revenue and efficiency. Many access control tags are tied to credit cards.

Near field communications (NFC) uses a low-power RFID chip that transmits a unique code. The phone then becomes a credential that can be used for mobile payments, access control, ticketing, and information exchange. This requires a voluntary gesture that protects data privacy. NFC will play a much bigger role in the future.

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### Parker Communications

The ability to communicate with parkers used to mean having a phone-based intercom substation in a lane. IP-based intercom and video systems now allow higher levels of security, central management of several facilities (see p. 22 for more information), and color graphic messaging, offering better communications with the parker and advertising and revenue opportunities.

Parkers can be reached by social media, mobile apps (see the February 2012 issue of *The Parking Professional* for more on this), and device-based messaging. Websites allow parkers to find and purchase parking in advance of their arrival. Real-time transportation information from GPS devices or smartphones is also growing in popularity.

### On- and Off-Street Parking

Some cities are starting to manage parking with a variable pricing model, which allows operators to set lower prices during off peak times during the year and increase prices during high peak times. By collecting space occupancy data, a city can determine its actual high and off peak times. This model incorporates real-time space sensors, off-street pricing, PARCS, and enforcement in a unified system.

On-street parking is also becoming high-tech. Single-space meters can take credit cards, making payment easier. The multispace meter reduces both the hardware and the revenue collection time and personnel needed. A pay-and-display multispace meter typically manages 15-20 spaces and is great for short-term studies of parking use.

Valet parking uses wireless hand-held terminals to speed operations. Some systems use Bluetooth and barcode scanners that provide a more effective way of to manage valet parking operations, prevent the loss of vehicles and keys, and cut costs associated with bogus damage claims. Barcoded tickets, employee badges, vehicle identification numbers, and color sheets track the date and time of check-in/checkout, automobile information, and employee data. Because each scanner works like a wireless point-of-sale computer, it can also offer remote cashiering and the ability to request vehicles.

### Video Analytics

Video analytics uses special software to "see" motion of vehicles or people, the direction of traffic flow, congestion, and abnormal behaviors of individuals such as people crouching behind vehicles, as well as abandoned object and shape-based object detection and tracking.

### Wayfinding Technology

Signage helps customers make efficient decisions about parking. Individual space detection requires a sensor in each parking spot with a red/green indicator light

that shows occupancy. The indicator lights may be over each space or as part of an indicator bank at the end of the bay. The sensors also communicate in real-time to a back end server.

Zone counts reduce the number of required sensors (lowering cost), but provides less accuracy. The parker will know there is a space somewhere in the zone, but not exactly where, resulting in more traffic circulation. The zone needs to be audited regularly or the public loses confidence in the information.

## Ticketless LPR Technology

Automated license plate recognition (ALPR) camera systems are used to scan and record vehicle license plates. ALPR systems can either be stand-alone or integrated into access control or revenue parking systems. Integrating allows for revenue to be associated with a vehicle instead of a ticket, which may be lost or swapped. Maintaining vehicle and plate images along with their time and date stamps allows for accurate resolution of ticket discrepancies, improved customer service, and prevention of lost revenue.

ALPR is a game changer that offers opportunities for improved physical security. It can capture license plate data and verify it against known lists to ensure vehicles are not suspect or wanted before being allowed into a site.

An ALPR system can also capture all vehicles, time and date stamps, and locations, allowing for improved asset utilization, reduced cost, and greater data accuracy.

## Green Lighting Technology

Over the years, there have been several advances in lighting technology. Many garages still rely on an amalgam of high intensity discharge (HID) lamps that have very high lumen output but include a distinct set of drawbacks, such as high mercury content, low energy efficiency, short lifespan, high rate of light depreciation, susceptibility to vibration/climate, and poor quality of light.

So how do you brighten up your facility and reduce energy consumption by 30 to 85 percent? Some choose fluorescent lighting because of its attractive low first cost and because the newer T8 and T5 technologies stay brighter longer and the light will maintain most of its luminosity throughout its rated life. Many choose lower maintenance induction and LED technologies, which address the previously mentioned shortcomings of HID lamps without sacrificing performance.

The key to a successful lighting project is to install a demonstration field, which will help you see the performance of your options.

The Energy Policy Act of 2005 allows a tax deduction of $.60 per square foot for energy conservation measures that reduce energy demand by 50 percent or more from established standards. Projects must be complete by end of year 2013 to enjoy the benefits. (See the March 2012 issue of *The Parking Professional* for more on this.)

## In Conclusion

These are only a few technologies of today that are helping cities, management companies, airports, hospitals, and universities run more efficient parking operations. New technology will help parking organizations meet and exceed their goals and the expectations of their customers. **Ⓟ**

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