Creating a Parking Technology Ecosystem

Ensuring integration and compatibility helps create a comprehensive system that works for everyone, everywhere.

By Andy Santana
HERE ARE SEVERAL DIFFERENT TECHNOLOGY SYSTEMS that can be used to manage all types of parking infrastructures, and many have the capacity to share common data to help make the parking experience ideal. When implementing new technology, integration and compatibility between systems is key to achieving a smooth, systematic handling of parking needs. One of the most important features a central parking management system (CPMS) can have is the flexibility and adaptability to integrate with an infrastructure’s existing systems and new systems with ease to allow an amazing ecosystem of parking systems to coexist. Two main drivers within these features are portability and automation to be able to increase productivity as well as availability in a fast-paced and changing industry. These are key for infrastructural success.

Systems integration
Almost all CPMS are dependent on data, and much of the information they store is used for more than one purpose. A system might handle account creation, enforcement, permitting, communications, and other pieces of information.

By integrating various systems, it is possible to minimize data entry and maximize data accuracy. Integration ensures data are entered, stored, and maintained in only one centralized place. Thus, a data file containing a list of students and staff can be entered into a CPMS and maintained by key personnel responsible for redistributing and sharing that data between other applications. The same principle can be applied to any data file coming from an integrated system.

SCENARIO: The ABC University Parking Office normally gets its user data from software named Baron. This application is used across the university and managed by the university’s IT team. It creates and manages student accounts and exports student data to other departments for their needs. Baron exports these files as comma-delimited text files; someone on the parking staff then needs to manually input updated student information into the parking software. It normally takes 24 to 48 hours to make sure these data are processed and handled correctly.

SOLUTION: The ABC University Parking Office recently invested in a central parking management system that integrates with Baron. Now, the parking office can have the CPMS pick up the text file from Baron and automatically process all the updated student information within one hour.
There are several advantages to system integration, including avoiding the duplication of data. It can significantly reduce operational costs by removing the effort required to enter data several times into several systems. It also reduces the risk that contradictory or obsolete data are stored by various integrated systems. For the user, the differences between various integrated systems is almost invisible. Some parking systems can be integrated to the point where, as far as the user is concerned, there is only one system. This can greatly reduce training costs and increase productivity. Keep in mind, however, that while system integration and the distribution of data by various parking systems are great for infrastructure growth and productivity, the integration needs to be carefully organized and properly documented so any updates and changes to one system do not have unintended consequences for another.

In addition to being mindful of proper organization, hardware or systemic changes to an integrated system also tend to be more involved than with stand-alone systems and require tech-savvy personnel to accomplish. Integrated systems are also vulnerable to widespread failure if problems occur in any of the participating integrated systems, which is another problem that does not occur in stand-alone systems. Nonetheless, in many cases, the advantages of having system integration greatly outweighs the costs and these inconveniences.

**Automation**

Automation is relatively new to the parking industry but is remarkable when integrated properly; it can increase productivity markedly depending on the infrastructure of the parking environment. Automation is simply defined as the technology by which a process or procedure is executed without any human interaction or assistance.

When system integration exists, automating tasks such as data entry, permitting based on criteria, citing based on criteria, and sending out communications based on criteria are all possible by just creating a system procedure to handle such tasks.

When it comes to automation, making sure that an audit system is set in place is key in achieving accuracy in data processing and helpful in identifying errors and systematic issues.

**System Compatibility**

System compatibility and integration are closely related. To share data between systems and for users to have access to seamless systems with common appearances, the integrated systems must be compatible with the hardware, operating systems (OS), and software such as web browsers.

One way to guarantee compatibility is to use hardware with common OS and capabilities, often by purchasing all necessary hardware from one vendor and at the same time. An example would be buying license plate recognition (LPR) cameras from the CPMS vendor and integrating them to be recognized by the software. Although this approach can lock you into a long-term relationship with a set of vendors, it maximizes the compatibility of a fully operational central parking management system with relevant and related hardware.

Another advantage of using compatible systems throughout a parking infrastructure is the potential to significantly reduce maintenance and upgrade costs. Where parking systems are compatible and integrated,
Parking staff need to be familiar with a smaller set of system procedures than if a wider variety of systems were in use.

Training costs are also reduced if various systems are compatible. In most cases, if all the software in use is from the same vendor, common processes and procedures will generally apply throughout, making it easier for staff to be trained and become accustomed to the system.

Compatible software is useful even where systems are not integrated. Use of compatible software ensures that various kinds of files such as Word documents, spreadsheets, data files, and email can be shared between staff in various locations without concerns about data conversion or inability to read others’ files or documents.

An issue that can arise between unified systems is compatibility between different versions. Software is regularly upgraded—on average every two to three years. Things like major upgrades, minor upgrades, or service packs can be released regularly and are primarily intended to correct systematic problems or bugs. It is extremely important to manage this process, known as version control, to ensure system stability and protect data. Using different versions of software can cause systematic problems to arise within integrated systems. The benefits of having systems working together efficiently makes for a truly more productive parking environment and allows for resources to be able to be allocated effectively. The key is to make the systems work together like an ecosystem.

**Portability**

Portability is defined as being able to access a system at any time, any place, and anywhere there is an internet connection. Most parking systems are limited to a parking environment and don’t allow for access away from the environment. Being able to have access at all times is crucial, especially in the parking industry.

The dawn of cloud-based services and platforms allows everyone to have access to software online. But one of the key factors in portability is making sure the system works on all platforms, including different computer and mobile device operation systems. The main advantage of having portability with compatible systems is that you always have the system on demand. This makes for even better productivity and reduces cost in hardware as well, as users can access it on existing hardware or their own mobile devices.

While portability is a key factor in compatibility, taking precautions and ensuring access is within a safe environment is very important. Portability brings availability, and with availability comes potential security risk. When something is available at all times, it is subject to potential security threats and/or breaches. As the parking industry handles personal data, this could be very problematic. Taking precaution is key in preventing data breaches.

Ultimately, having a central parking management system that allows for system integration and is compatible with other systems is key to establishing a true parking technology ecosystem. Nothing is worse in the moment like having to run to the office to use the computer there because the system isn’t compatible with a different operating system or your mobile device.

As the parking industry evolves into the digital era, more parking systems are becoming compatible with each other and allow for non-parking system integration as well. With the parking industry also embracing new technology and data science, having a hard time finding or managing parking will quickly become a thing of the past.

---

**The benefits of having systems working together efficiently makes for a truly more productive parking environment and allows for resources to be able to be allocated effectively. The key is to make the systems work together like an ecosystem.**

**Portability**

Portability is defined as being able to access a system at any time, any place, and anywhere there is an internet connection. Most parking systems are limited to a parking environment and don’t allow for access away from the environment. Being able to have access at all times is crucial, especially in the parking industry.

The dawn of cloud-based services and platforms allows everyone to have access to software online. But one of the key factors in portability is making sure the system works on all platforms, including different computer and mobile device operation systems. The main advantage of having portability with compatible systems is that you always have the system on demand. This makes for even better productivity and reduces cost in hardware as well, as users can access it on existing hardware or their own mobile devices.

While portability is a key factor in compatibility, taking precautions and ensuring access is within a safe environment is very important. Portability brings availability, and with availability comes potential security risk. When something is available at all times, it is subject to potential security threats and/or breaches. As the parking industry handles personal data, this could be very problematic. Taking precaution is key in preventing data breaches.

Ultimately, having a central parking management system that allows for system integration and is compatible with other systems is key to establishing a true parking technology ecosystem. Nothing is worse in the moment like having to run to the office to use the computer there because the system isn’t compatible with a different operating system or your mobile device.

As the parking industry evolves into the digital era, more parking systems are becoming compatible with each other and allow for non-parking system integration as well. With the parking industry also embracing new technology and data science, having a hard time finding or managing parking will quickly become a thing of the past.

---

**Andy Santana** is IT generalist III in the department of parking and transportation at Florida International University. He can be reached at ansantan@fiu.edu.