Spaces for improvement

In our connected world the most efficient way to find a parking space isn't by keeping an eye on the kerbside – instead your search begins on a smart device. **Jason Barnes** looks at ways in which we can solve many of a modern city's mobility issues by making parking smarter

A smart city brings about increased efficiencies, better working and cost savings through greater knowledge. That knowledge is gained through universal connectivity and near-constant electronic dialogue with sensors and smart devices.

This is the Internet of Things (IoT), which recognises that more and more of the objects in our lives will feature some level of innate intelligence. They can communicate what's happening –"I'm an in-ground sensor, the area above me is full and this parking space is therefore occupied" – and also their intentions – "I'm a consignment of perishable goods and I need to move from location A to B in the next few hours".

Both of those examples illustrate important sub-sets of the IoT: the Internet of Mobility and the Internet of Logistics. That should be no surprise, as much of the increased efficiencies, better working and cost savings mentioned above is about seamless movement of people or goods. But, they illustrate how if we're looking to make a town, city or any other settlement smart, mobility is a very good place to start.

Sophisticated apps can take care of all aspects of journey planning, including parking

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>
> **Andy Souders, CEO, All Traffic Solutions (ATS)**

In fact, says Andy Souders – CEO of All Traffic Solutions, which develops cloud-based solutions for the parking and traffic safety sectors – a lot of improving mobility can be achieved by sorting out immobility. He means parking.

"If we can make parking smarter, we'll remove many of the issues which prevent mobility from getting better. There's good reason for basing a smart city on smarter parking," he says. "We've got past the historical mismatch between traffic management and the traditional parking business model which saw queues as positive and representative of more business. It's now recognised that queues are bad news.

"The online existence has spilled over into the physical world and people's expectations have shifted. They've become more demanding. Retail and leisure venues emphasise personal experience but the overall trends in parking impact all providers and users to some degree."

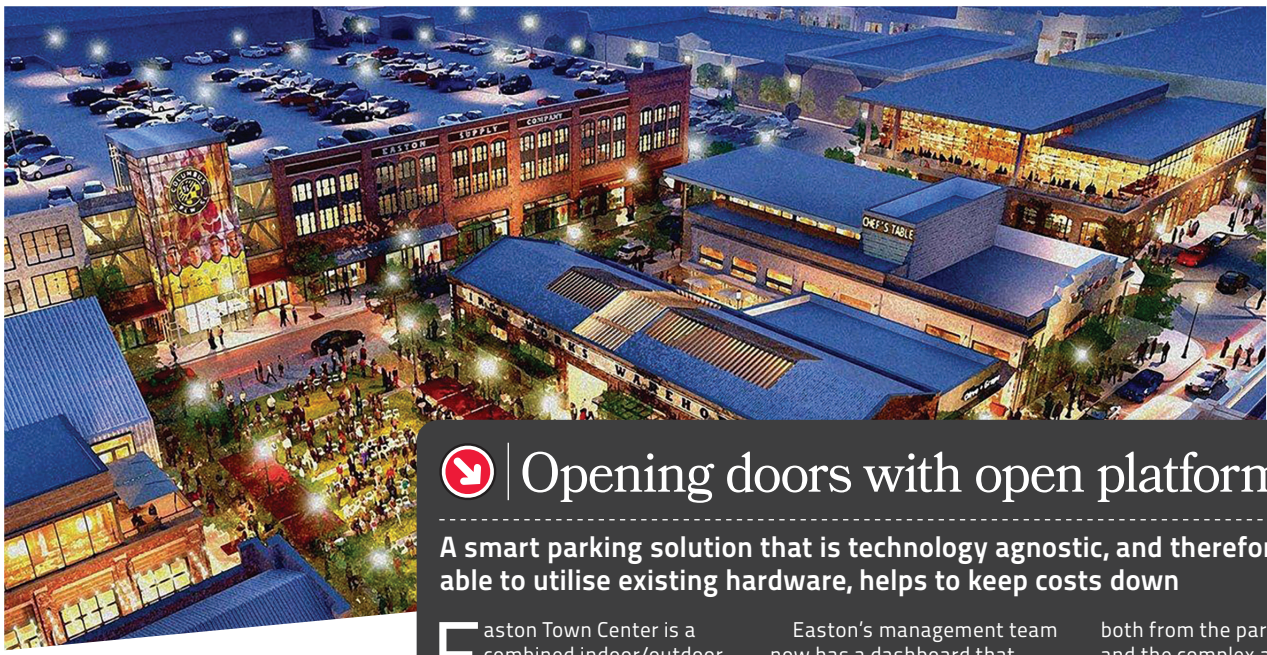
Those trends mirror developments elsewhere in mobility/Mobility as a Service, with the increasing use of smart devices together with sophisticated apps that take care of all

PHOTOGRAPH: LIGHTPOET/STOCK.ADOBE.COM

£23.3bn

The annual cost in wasted time and fuel to the UK economy resulting from drivers searching for parking spaces (this is $72.7bn in the USA)

(2017 Inrix survey)



Opening doors with open platforms

A smart parking solution that is technology agnostic, and therefore able to utilise existing hardware, helps to keep costs down

Easton Town Center is a combined indoor/outdoor retail and leisure complex in Columbus, Ohio whose 240+ outlets attract roughly 30 million visitors per year.

The Center's visitor experience was suffering because of issues with gathering data from across more than 9,000 parking spaces. To address this, new sensor technology was added to the existing and an open-standards, Cloud-based data platform from All Traffic Solutions (ATS) was implemented.

Easton's management team now has a dashboard that provides real-time information on systems' statuses and performance. Analytics provide highly accurate information on peak volumes and capacity trends, and – as drivers are able to rely on the information they are given – the visitor experience is much improved.

"A positive parking experience is a big factor in attracting repeat business. The new smart parking solution increases revenue realisation both from the parking function and the complex as a whole," says Jennifer Peterson, Easton's chief executive.

"It's enabled us to significantly improve parking performance for minimal outlay. The non-intrusiveness of the new detection technology and the ability to re-use existing, systems kept costs down and reduced disruption. That's another important factor in maintaining the customer experience and a good public profile."

aspects of journey planning – booking, routing, online payment, access to buildings/facilities, and (increasingly allied to parking) vehicle charging.

"Users want an at-the-fingertips, paperless experience which can adapt on the move," Souders continues. "They want access to specific parts of a venue nearest to their final destination – and if they can't have that, they'll go elsewhere, leading to increased congestion and reduced revenues."

Data and sharing

Successful smart parking strategies help address congestion issues and work as business enablers. They improve environmental performance, public health and quality of life.

In such an environment data is king but it has to be accurate and timely. Parking managers don't just need to have capacity; they have to be able to guarantee the right capacity at the right places and times. They need a dashboard that tells them what's going on at a glance, and which can push out real-time parking information that scheme users can and will trust.

That, says Souders, implies several things. "At the sharp end, it requires accurate count, classification and identification capabilities. These include tag readers, vision systems and ANPR/ALPR. In the back office, it requires top-quality analytics and the ability to make sense of what's going on and what's about to happen – predictive planning is crucial. It also means being able to pull in data from other organisations.

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> **Jennifer Peterson, chief executive, Easton Town Center**

Above: **Easton Town Center, a shopping complex in Columbus, Ohio, is currently undergoing a US$500 million expansion and redevelopment, with smart parking as an integral part**

"There's no one-size-fits-all. Yes, cookie-cutter solutions are valid for simple applications, but no one vendor can provide a 'complete' solution straight from the box. Procurement is a partnership process and it's important for a buyer to get what they need.

"Dialogue is essential and open standards and protocols are a must. There's next to no reason, in this day and age, to be investing in proprietary solutions and risking the inflexibility and expense of vendor lock-in. Open standards-based solutions don't just enable future upgrades and expansion, they can also be brought in later to bring disparate systems together." (See *Opening doors with open platforms*.)

Communication

Dealing with openness from an institutional perspective can be more tricky. Data is often coveted – organisations work hard to gather it and it often costs them a lot of money; it defines their USPs and reasons for being; and simply 'giving it away' (as they see it) isn't a natural action for many.

There are also fears over security of data, particularly personal data. These are ill-founded as it is easy to anonymise data. Anonymised data is used to track crowd movements and determine public transport capacity needs, for instance, and in many ways the tolling sector has already successfully addressed

most of the issues that will impact upon parking. Open-Road Tolling (ORT) is reliant on millions of wireless transactions with individuals' private and business accounts. If the privacy and security of those transactions couldn't be guaranteed, ORT wouldn't be sustainable.

Just a few years ago the necessary levels of security would have required a bespoke, closed and more costly communications network. Now, cloud solutions easily provide the levels of connectivity and security needed. And some more progressive deployments are using it in the parking sector.

"What they currently lack is wider recognition of capabilities," Souders states. "Without more visibility, and more traction, we're always going to be held back by concerns over potential 'failure' and press and public criticism. This means that in too many cases we see only very small incremental changes in how parking happens, not the big leaps forward that are already possible."

Gaining that confidence is well-served by setting up trials and pilot schemes. These can be small-scale by individual organisations, or larger, more sophisticated and supported by multiple entities, public and private.

Pilots provide a proving experience for both service provider and user. They show what technology can do and how it can make life simpler and better. Perhaps even more importantly, they show what doesn't work, ensuring that by the time wider roll-out occurs kinks have been ironed out and barriers to user uptake have been lowered or removed.

Pilots of increasing sophistication are becoming more common. As with case studies which enable peer learning, they're a healthy indication of progress. But, says Souders, we still need more of them.

Bringing things to a halt

Smarter parking doesn't just benefit parking. It forms the gateway to smarter communities in general.

Some of the leading real-time information service providers already rely upon the buying habits of travellers to gain their data; as they tap in and out of mass transit, for instance, users provide an ever-growing and increasingly accurate picture of capacity requirements.

"Parking pre-booking can add origin-destination as well as locational/temporal demand information. It can be used to manage demand, through variable pricing or straightforward access control – 'no space, no go'," adds Souders. "It can also be used to manage freight movements, connecting with edge-of-town truck parks and allocating time slots and capacity to incoming deliveries."

"Parking is at more of a premium than ever before. The kerbside in particular is becoming an increasingly contested space, and anything which can make an appreciable, intelligent difference to access is going to become highly prized.

"The technology and data capabilities exist to support pretty much any parking strategy," he concludes. "Drivers are going to be the imaginations of implementing agencies and the support of their suppliers. The results will be even tighter integration of parking and traffic management – and smarter, cleaner, more liveable communities."

Smart parking with simple cameras

Asura Technologies has a developed a fully scalable video analytics platform that can maximise parking efficiency in cities

Better parking not only improves quality of life for citizens, it benefits the economy and the environment, too. And the most economical and environmentally friendly parking space of all is one we don't have to build. Asura Technologies enables this kind of sustainability through upgrades to existing infrastructure and installation of non-invasive smart systems that pave the way to a world beyond smart parking.

Asura Technologies develops applications using video analytics that may serve as key components for smart parking initiatives. The aim is to achieve high-level automation by 'smartening up' existing infrastructure using as little hardware as possible. Cameras without smart features are common in cities, and if not already available are cheap to procure and install. These provide the video needed for Asura parking solutions. It all starts with parking-space occupancy monitoring on- and off-street, with ANPR/ALPR for reference. Enforcement is done by automatic registration of the vehicles' parking time and matched with the payment data of an assigned kiosk or the mobile payment. Why have construction work when a few cameras can do the trick?

Efficient parking is more sustainable. To be efficient operators need information. The Asura system provides real-time figures on parking utilization and revenue, essential to understanding operations.

Asura Technologies' system is fully scalable, being able to handle a small parking site, a neighborhood of streets or a network of smart parking sites within a city. The dream is a city where all parking areas are interconnected using the same management system. In this city data and statistics would help to identify parking habits and patterns to enable dynamic pricing, where price can be changed according to supply and demand, or even sustainability policies. In the city of the future drivers will always be automatically navigated to the most suitable parking space, with the help of cameras and smart parking software powered by video analytics.

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> **Andy Souders, CEO, All Traffic Solutions**

London

The worst UK city for parking (an average driver spends 67 hours a year looking for a space). In New York this figure is 96 hours

(2017 Inrix survey)