get my PARKING
where mobility begins

THE PARKING INDUSTRY YEARBOOK 2024

PUBLISHED BY GET MY PARKING

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Foreword

Chirag Jain, Founder & CEO
Get My Parking

I am excited to present to you the 2023 edition of the Parking Industry yearbook! What started as a little idea back in 2021 has now become a relevant, respected publication within the parking industry. We're immensely grateful for the unrelenting support we've received from operators and industry partners worldwide.

Just like last year, I'll use this foreword to discuss how exciting this past year has been for the parking industry.

The landscape of parking has undergone transformational changes. 2023 has proven to be a pivotal year in the evolution of how we approach, manage, and interact with parking spaces. Our industry continues to navigate challenges, embrace technological advancements, and strive for sustainable solutions that redefine the very essence of urban mobility.

The popularity of digital parking methods over traditional manual processes is still on the rise. Even small parking operators are looking for easy ways to upgrade their locations to offer fast, cashless parking.

While parking apps took the stage last year, app-less parking enabled by QR codes is quickly stealing the show since they're cheaper and faster to set up and maintain. Our data supports this - we saw 1.9 million sessions created via our QR-based web app payment solution, a 213% increase YoY from 2022.

Another hot topic in the parking industry is the electric vehicle. Operators need to figure out how to make EV charging user-friendly as well as profitable, since it will eventually be an irremovable part of the parking experience. Governments everywhere have brought in legislation that endorses and encourages EV usage, a clear sign that operators need to future-proof their locations while the time is ripe.

AI was also a much-discussed theme, as it is within most industries these days. From AI-assisted LPR technology that assures perfectly accurate license plate reads to self-parking garages with automated valet parking, artificial intelligence is here to stay. It's sure to prove instrumental in increasing operational efficiency and making parking faster and smarter.

Sustainability has rightfully earned its place at the forefront of industry discussions, and 2023 has seen a heightened focus on eco-friendly parking solutions. The parking industry is embracing its role in supporting the transition to cleaner and greener transportation. The yearbook covers a few easy ways in which you can go green in your locations.

Flexible, digital permits continue to be a driving force in reshaping the parking landscape. The days of paper permits and windshield stickers are gradually giving way to secure and easily manageable flexi-permits. This shift not only reduces administrative overhead but also enhances the user experience, allowing for fast access to designated parking areas. We saw over 37,100 permits sold by our customers in 2023, a 794% increase from last year - a clear indication that flexi-permits are something parkers want to return for.

Parking is quickly becoming more than a static infrastructure, evolving into a dynamic ecosystem that involves artificial intelligence, multi-use parking apps, electric charging, and more. This yearbook hopefully serves as a comprehensive look over the trends, challenges and success stories that defined our 2023.

I extend my heartfelt gratitude to all the industry partners who contributed to making this yearbook a reality. Together, we stand at the forefront of innovation, ready to embrace the challenges and opportunities that lie ahead. I sincerely hope that 2024 brings us closer to perfecting the parking experience for our customers :)

2023 was a great year for the parking industry - as travel and mobility returned to its pre-Covid state, operators across the world were able to upgrade and improve their parking services to be better, smarter and more user-friendly for their parkers. With new technologies like artificial intelligence coming into the picture and advanced automations replacing a large portion of the manual effort that went into coordinating the parking process, the future of the industry seems bright and exciting!

In this year's issue, we'll be talking about all the tech that's been taking over parking. From flexible digital permits to QR codes, digital parking has proliferated the industry and every parking business has recognized that they need a digital tracking and payment system for their garages. The modern driver demands nothing less than a seamless, hands-on parking experience.

Most businesses (and parkers) have turned to parking apps. While there have been numerous complaints, especially from those belonging to older generations, that these apps and digital parking in general have become too complex to be user-friendly, operators and developers have continued to create a parking process that anyone can figure out, even if they're not tech-savvy.

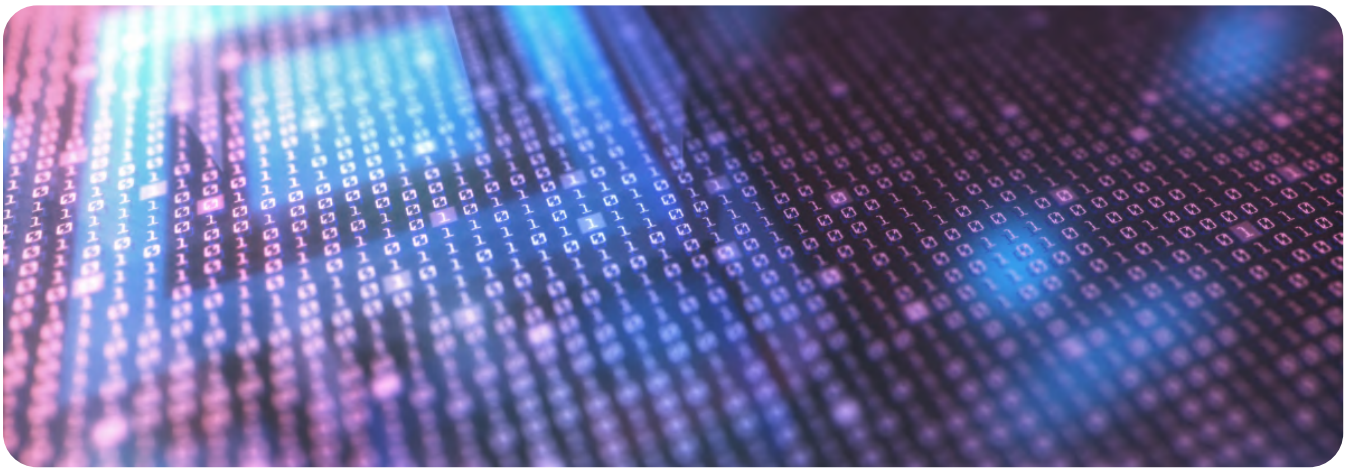
Digital parking development has quickly become a race to make parking a mindless experience, where the parker doesn't have to worry about gates, tickets, payments or creating sessions - with AVP (Automated Valet Parking) coming into the picture, they may not even have to worry about actually parking the car in the future.

To make this possible, operators are trying to reduce the number of consumer touchpoints in the whole process. To remove the need to download a dedicated parking app, they're offering walk-in parkers QR codes that they can scan to pay through a web app. To remove having to interact with an interface at all, there's the option to Tap and Park, where you tap a card while entering and exiting the location and the payment is automatically deducted based on how long the cameras think you were inside.

With AI coming into the picture, parking becomes a drive-in-drive-out process - no halts, no tickets, no cash. The AI here is integrated into the license plate recognition system, specifically to assist with license plate matching between the reads at the entry and exits. Their license plate becomes their user ID, and if they've already added their card to the operator's database, the payments are once again automatic, accurate and not something the parker has to worry about.

Most of these smart parking solutions leverage IoT systems that enable all the elements in the parking lot to communicate with each other, usually using sensors and connected devices that provide real-time data to the operators. Drivers can access this information through the mobile apps, letting them know more about the capacity and facilities in each parking garage. IoT integrations also facilitate predictive analytics, which allows parking operators to optimize resource allocation and streamline their management.

However, these upgrades tend to be expensive for traditional parking operators whose sole income comes from the locations. For them, a good choice would be a retrofit IoT GateKit - these Plug N Play devices can integrate with virtually any gate or PARCS system, digitize and automate it in no time and set up cashless, digital payments in any parking lot. The rising popularity of retrofit parking technologies is great news for the environment, too, since it reduces the waste of resources from purchasing newly manufactured equipment.



We've also been seeing a lot more flexibility in terms of parking payments. With more touchless parking and fewer cash transactions being a goal for most parking operators, digital wallets, QR codes and automated card payments have become popular. Users can pay for parking using mobile apps, digital wallets, or even prepaid cards, streamlining the payment process and enhancing the overall user experience. This trend is likely to continue as technology evolves, with potential expansions into cryptocurrency payments.

As the global transition towards electric vehicles gains momentum, the parking industry has responded by integrating EV charging infrastructure into its facilities. In 2023, we witnessed an increased focus on sustainability, with more parking lots and garages installing electric charging stations. This trend aligns with the growing popularity of electric vehicles and supports the broader environmental goals of reducing carbon emissions. The development of EV-friendly parking infrastructure is likely to remain a crucial aspect of the industry in the coming years.

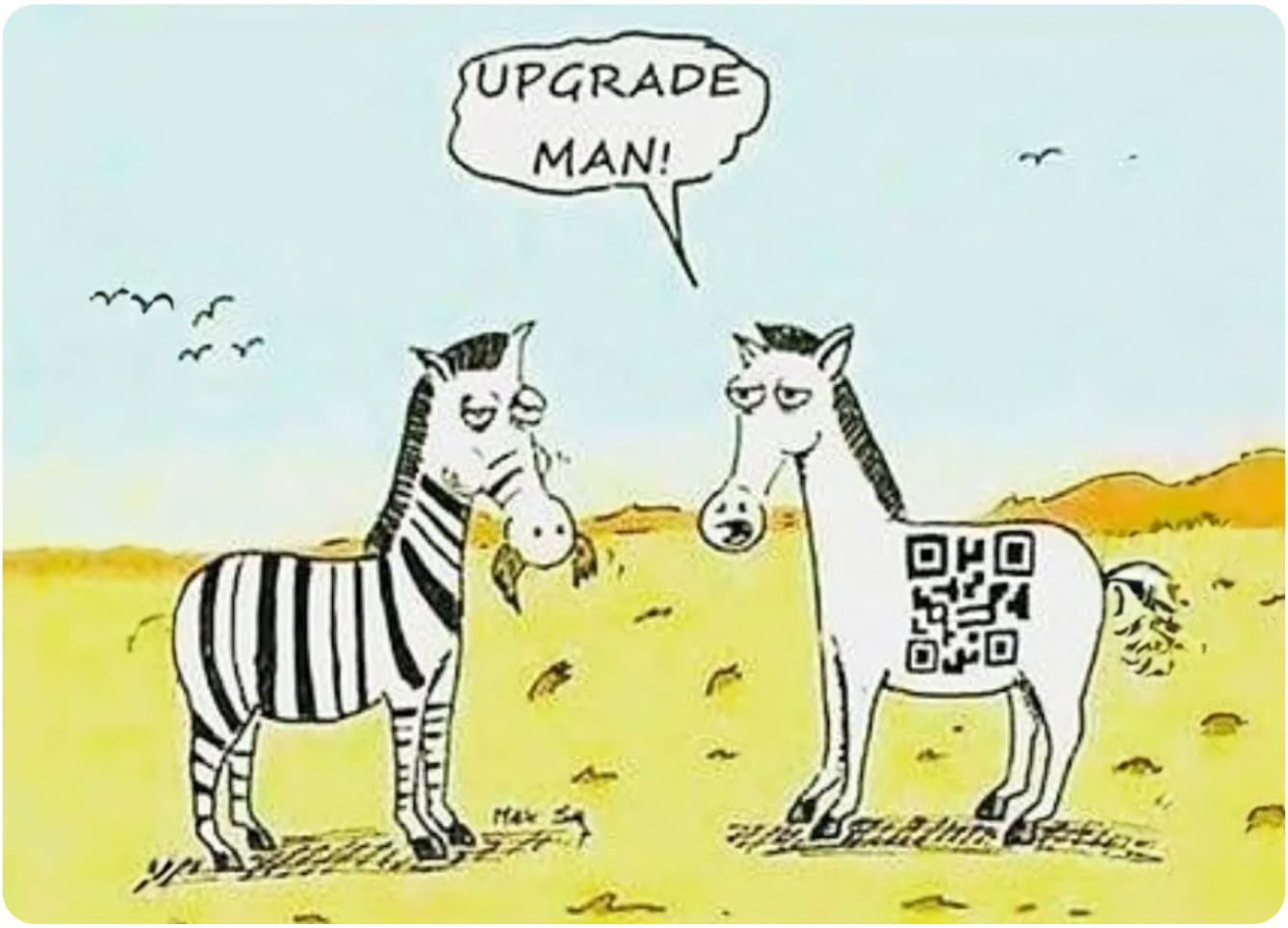
Urban developers have predicted that once the fossil fuels run out and EVs take over completely, parking lots will become synonymous with charging hubs. Every parking spot will have an electric charging point and every part of the parking process will be designed to fit EV models. While this isn't far-fetched, it is a long time away in the future, and definitely not something we expect to see in 2024.

Something we do see having an impact on parking is the rise of shared mobility services, including ride-sharing and micro mobility facilities that reduce the number of private vehicles on the road. This is in contrast with the rise in the number of private vehicles right after the pandemic ended, where people were willing to take their own cars to work if it meant it reduced the chances of infection. With miniature recessions hitting working classes across the world, people are turning to public transport and rideshares to reduce the costs of commuting. As a result, parking spaces are being designed and repurposed to serve as hubs that allow seamless transitions between private cars, shared rides and public transport - this reflects the industry's commitment to embrace diverse mobility options.

Let's Get Started!

This year, the yearbook delves into a few major topics of interest in the parking industry, from EVs and permits to QR codes and AI. You'll get to see a couple of exciting interviews from veterans of the parking and mobility industry sharing their thoughts on how the past year has been and how the year ahead could be. These articles will hopefully give our readers an idea of what to prepare for in 2022 as well as the products and trends that you need to keep an eye on to make sure your locations are parker-friendly and profitable.

Break time 😂



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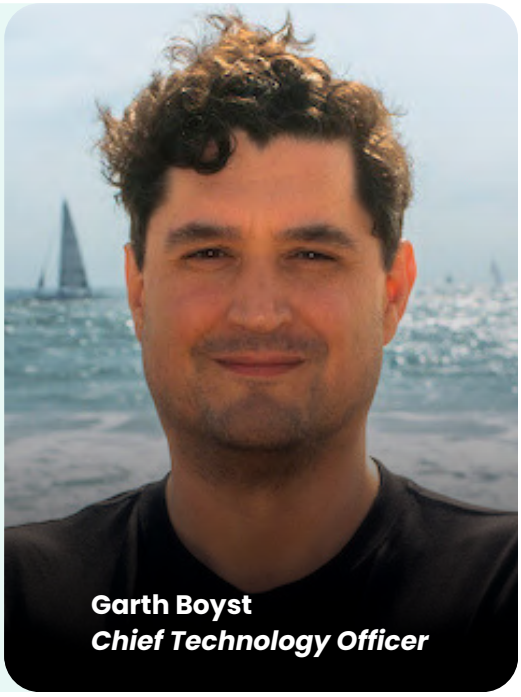
INTERVIEW

Perfecting Parking Data

About Ocra

We talked to Garth Boyst, the Chief Technology Officer and head of engineering at Ocra. Ocra's platform and sophisticated custom integrations with demand channels, such as aggregators, break down data silos and centralize rate and inventory management for parking operators. Here's what they were up to in 2023.



Garth Boyst
Chief Technology Officer

What were the highlights of the year 2023? What are the changes and upgrades you made to your platform and why?

Garth : 2023 was a remarkable year of breakthroughs and innovation for Ocra. We saw significant growth in improving the engineering of our products.

I'm not just referring to major advancements in our offerings but also in terms of further developing our understanding, as the people who build products, of what technologies and integrations are needed to future-proof our partners' businesses and give them an edge going forward.

A major highlight this year was introducing sophisticated event management with rate tiering. This enables parking operators to yield rates as inventory increases or decreases.

Event parking reservations are at record highs which represent an immense revenue opportunity but also the possibility of large-scale operational problems.

For example, parking for a huge event like a Taylor Swift concert may sell fifteen months in advance. This creates problems for both the operator and the demand channel. We help ensure that optimized rates and tiered pricing are configured during the period in which customers are booking.

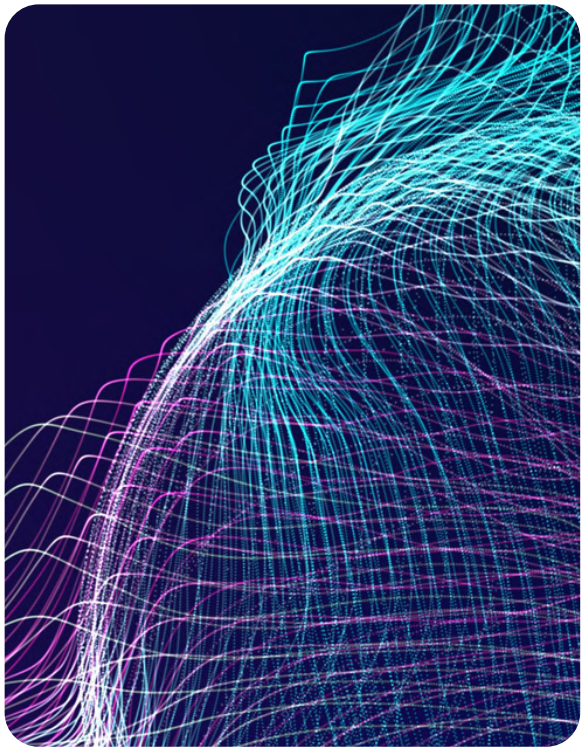
We also embraced the future of parking with the integration of drive-up digital payments (like scan-to-pay and tap-to-pay).

Additionally, we launched our Partner API, which surfaces transaction data to technology companies that need access to the data in real-time and can leverage a one-to-many connection via Ocra.

One use case is with customer service platforms we work with: Parker Technology and Umojo. By pulling data from Ocra's connected network, they can quickly diagnose and solve on-site issues for customers. These developments are not just incremental improvements - they represent a transformative leap in our platform's capabilities.

Your platform centralizes essential data for parking operators. What data points do you standardize and surface in your platform?

Garth: Our platform focuses on centralizing key data points across aggregators.



If you're in ParkWhiz's seller console, for example, the fields look very different from what's in SpotHero's front end. Those discrepancies apply to the back end, too. In order for Ocra to let operators manage rates and inventory across multiple aggregators in one place, we need to standardize those data points, which is no small task.

A few key data points that Ocra helps operators visualize are rates across channels, commissions owed to channels, advanced booking window, and customer reservation patterns.

Have there been any interesting changes in user behavior or requirements that influence how you continue to enhance and upgrade your platform?

Garth: User behavior and requirements have significantly influenced the ongoing enhancements to our platform. One of the key areas we've focused on is mobile optimization, which is handy for parking operators who spend a lot of time on the ground in facilities.

Another area where user feedback has driven our development is permissioning. We've introduced more granular control for individuals in specific roles that give them direct management capabilities over aspects they previously depended on aggregator account representatives for.

This change is especially notable in managing events, where operators often need external help to set up and modify rates and inventory. In fact, this year we did a full overhaul of our events feature which was primarily driven by user behavior.

What we heard from the operators we work with is that they would frequently identify events that were being missed by the channels, indicating a gap in our system. By addressing this, we've not only solved a critical problem but also enhanced our platform's overall functionality and responsiveness to user needs.

What are your plans for your platform in 2024? Any updates on deck that you'd be willing to share with the public?

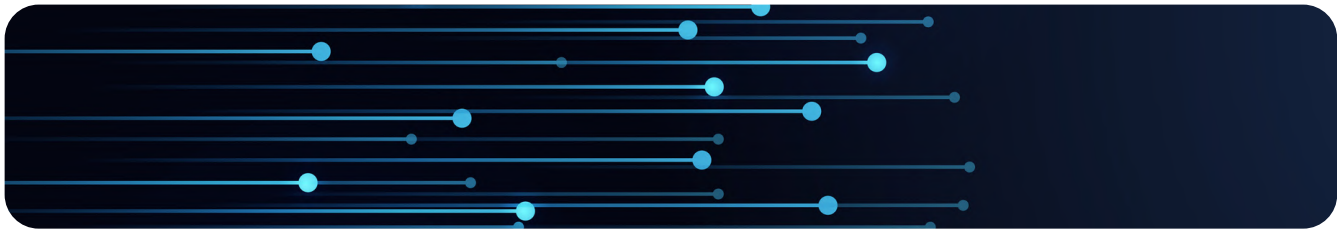
Garth: 2024 is going to be a big year for Ocra. Our engineering roadmap is ambitious but attainable due to the exceptional talent we have on our team. Here's a peek into what's up next: we'll be adding multiple new integration partners, advanced yield management and functionality and automations, and more advanced reporting and analytics. We will also be integrating with more direct channels which include the operator's own technology.

How big of an impact do you think viewing data in a holistic way can have on the success and revenue of any parking business?

Garth : I think it's critical for an engineering team to think about the business outcomes of the features and integrations we're building. In my years leading teams like this one at Ocra, I've learned the value of building a strong back and forth with the revenue side of the business so we can stay aligned on what we're building as well as why, who it's for, and what it does for our partners.

We're a high-growth start-up and lean team and this helps us prioritize and stay focused, getting the most impactful stuff out the door first.

I'd say that Ocra optimizes and maximizes the experience that operators have with using demand channels such as aggregators. In many cases, these channels are a



significant revenue opportunity for operators, but especially in instances when operators are using multiple channels, the management tasks can be time-consuming and difficult.

We all know that the best thing an operator can do is actively manage the demand channels. Interact with your rates and inventory. Make adjustments based on demand.

But the reality is that time and resourcing constraints exist. Not to mention that the data from all of these systems is fully siloed; none of them talk to each other. We want operators to be able to get the most they possibly can out of these channels without disrupting their operating rhythm or creating extra work.

When you are pricing competitively at any given moment, you can use these channels (which spend millions of dollars a year on marketing) to surface your locations to customers. Marketing without a million-dollar budget – that's huge.

Also huge: the ability to quickly react to changes in demand because transaction information for all of the channels you're using is in one dashboard. I want to call out our Universal Inventory solution, which is something revolutionary. Neither operators nor channels will hit revenue ceilings when all of the operator's inventory is in one big "bucket" that the channels can all race to sell.

Oversells aren't an issue either because, once a spot sells through one channel, Ocra automatically removes it from the others. Overbooking results in a poor customer experience that can prevent that customer from returning. That's a bad business outcome that we help our operator partners avoid.

As one of the go-to names in the industry when it comes to parking data, are there any interesting observations or trends you've noticed from parking operators that you can share with us?

Garth : There's lots of interesting stuff going on right now, for sure. I'll share a couple of things that I see from where I'm sitting.

First, operators making investments in analysts and generally using parking data and KPIs to make better pricing decisions. Over the course of 2023, there's been a general movement towards more on-point rates; we've observed this firsthand.

There are also many more digital payment solutions entering the space. My speculation is that some businesses are realizing that in their case, it makes more economic sense to install a combination of technologies for digital payments, LPR, and enforcement than it does to install and maintain a gate.

There's also been an emphasis on branding and marketing to connect with customers. We're a B2B business that doesn't market to the consumer but operators have a strong B2C component, and they're definitely leveraging channels and tactics here on a more advanced level.

ARTICLE

Charged and Ready: Plugging into the Electrifying World of EVs

Over the past few years, we have witnessed the slow, steady rise of electric vehicles as they made their way from being considered a rare choice made by environmentalists to becoming an integral part of the future of mobility. They now constitute 16% of the global light vehicle market, marking a significant increase of 12.4% from last year. EVs are on the brink of becoming a cleaner, cheaper alternative to ICE (Internal Combustion Engine) vehicles - will 2024 be the year of breakthrough for the clean mobility industry? What's standing in their way?

EVs Are The Better Choice

Climate change is being felt around the planet with natural disasters like floods and hurricanes wreaking havoc and taking lives.

There's nothing natural about these calamities, as scientists have proved time and time again that irregular outbursts from Mother Nature are nothing but the consequences of the irreversible damage we have done to the planet. It is no wonder that governments and civilians across the world are starting to see the importance of switching to cleaner, greener alternatives in their daily lives.

Shifting to an electric vehicle from a fossil fuel combustion vehicle can significantly reduce your carbon footprint. The total emissions from the total life cycle of an EV are 20% lower than that of an ICE vehicle. Fully electric vehicles that have zero tailpipe emissions are even better for the environment.

A common argument raised against EVs is that the manufacturing processes are almost equally polluting for both ICE vehicles and EVs. However, once the wheels start turning, a gas-powered vehicle continues to emit CO2 throughout its lifetime, a large portion of which are direct emissions, while an EV can be driven for years and still not emit the same amount of pollutants.

In the long run, ICE vehicles powered by fossil fuels will become a rarity on the road as gasoline, petrol and diesel prices plummet through the roof. As the stores of oil beneath the ground run out, authorities are recognizing the repercussions of extracting, processing and distributing these pollutants at such a large scale. Once the harvesting of solar and hydroelectric power becomes easier and more efficient, we can expect to see more EVs humming around town as people can afford to make the smarter, kinder choice for the environment.

Sales Increase Steadily

According to Canalys, worldwide sales of EVs have grown by 49% to 6.2 million units in early 2023. China has the largest EV market, with over 55% of the global EV sales (3.4 million units) being sold there, despite the government calling an end to one of their major EV subsidy schemes earlier this year.

The second-largest EV market is Europe, with a 24% share and over 1.5 million units shipped. There's good demand for EVs in the continent, especially since supply-chain problems and other logistics issues are getting resolved, positively impacting the price range for the cars. Chinese EV brands are also making their way into the European market, competing with Tesla with mixed outcomes.

The US stands third in global EV sales with 13% of the market share. With the implementation of new EV subsidies from the government as well as the expansive investments in setting up an efficient public charging system, it is expected that more people will switch to EVs. It's inevitable that the rising tide of electric vehicles (EVs) will fundamentally reshape the parking industry.

The integration of EV charging stations not only aligns with environmental goals but also represents a strategic response to changing consumer preferences. The parking industry's ability to embrace this transformation will not only support the widespread adoption of electric vehicles but also position parking facilities as essential contributors to a greener and more sustainable urban future.

The evolution towards EV-friendly parking marks a pivotal moment in the industry's journey towards a more sustainable and technologically advanced future.

INFOGRAPHIC

By the Numbers: Parking Permits

Parking permits are swiftly gaining favor again, marking a paradigm shift in the parking industry in the form of customizable digital permits. The appeal lies in their flexibility and convenience, offering users a seamless, smartphone-based solution. Easily managed through apps or online platforms, digital permits eliminate the hassles of traditional paper permits. Their adaptability to various parking scenarios, from residential to events, streamlines the permit process. Beyond convenience, the shift to digital aligns with eco-friendly practices, reducing paper usage.

Our Numbers From 2023 Support This Claim:

We saw a **715% increase** in the number of parking permits purchased through our platform.

We saw a **20x increase** in the number of customers upgrading from a one-time parking pass to a regular parking permit.

Thousands of Flexipermits were sold this year, making them a parker favorite!

As consumers increasingly prioritize efficiency and sustainability, the popularity of digital permits signifies a transformative phase, propelling the industry toward a more connected and convenient future.

Break time 😆

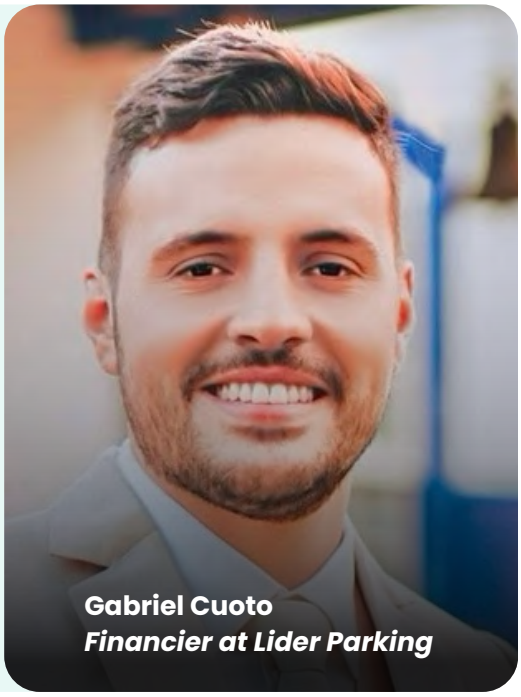
Credits : brcommunity.com

INTERVIEW

Smart Parking Tech Got Us Record-Breaking Profit

About Lider Parking

We talked to Gabriel Cuoto from Lider Parking, a parking planning and management company from Brazil. Lider Parking works to enhance and streamline their partners' parking operations, combining cutting-edge parking technology and high-quality customer support processes. Here's what they were up to in 2023.



Gabriel Cuoto
Financier at Lider Parking

What were the highlights of the year 2023 for your business? What are the changes and upgrades you made to your portfolio/platform and why?

Gabriel : This year we can highlight an increase in our net profit, thus reaching our record in more than 25 years in the company's history.

Something that really helped us achieve this historic feat was investing in smart parking technology, which increased the efficiency and agility of our parking operations. The new upgrades allowed us to cut costs and increase efficiency, especially with the launch of our parking app. A big win was launching a cashback system on our platform, which was a huge hit among our parkers, helping us bring in loyal customers and giving us an edge over our competitors.

We also saw an increase in commercial partners, such as shared vehicle rental companies, rental cars, among others

We've seen the parking industry prioritize environment-friendly practices this year with EVs coming in strong, operators focusing on minimizing emissions and a growing number of solar parking lots. How have you incorporated eco-friendly practices into how parking works in your portfolio?

Gabriel : In addition to launching EV chargers in more of our locations, we're also planning to implement them in places owned by our partner customers and enterprises, specifically in locations that do not have a clean, renewable energy source. Lider Parking will bear this initial cost, a step taken to encourage the usage of clean transport in Brazil. In this way, we want to bring renewable energy sources to even more locations, reducing costs and improving operational efficiency for our partners.

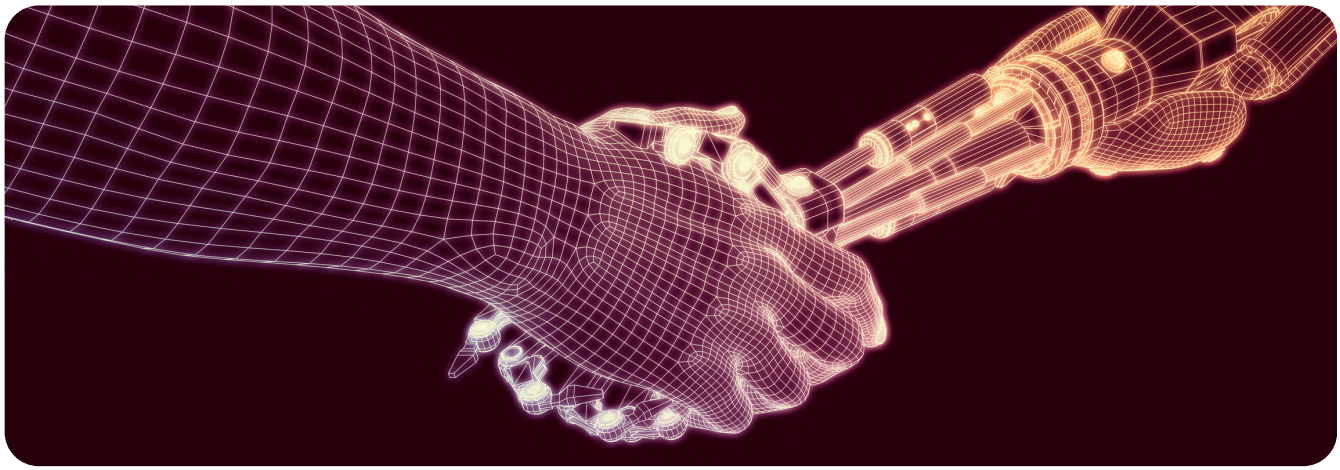
Have there been any interesting changes in parking behavior that you've noticed that may have impacted your business?

Gabriel : We've realized that parking lots have grown beyond what they used to be - they're evolving to become hubs for many other businesses that did not previously exist. Parking lots now house Mini Markets in commercial buildings, a space to organize shared car rentals, a charging hub for EVs and even storage space for cars for people who buy long-term parking. It's interesting and exciting to see bustling businesses thrive in parking lots - it's great news for operators who can leverage these opportunities to grow their operations.

QR codes are quickly becoming a part of the parking lot. Do you use QR codes for payments, sessions or access in your parking locations? How have your parkers reacted?

***Gabriel* :** We've been using QR Codes for 4 years now, and it has been a great facilitator for many commercial activities, especially payments and access via the parking app.

Many parts of the parking process now involve digitization and automation. Have you automated or digitized anything in your parking locations?



***Gabriel* :** Yes! Smart parking technology is increasingly improving processes within our parking lots. A couple of things that have definitely made an impact include using LPR technology for ticket issuance and introducing an operating system integrated with the national transit department to avoid errors when issuing entrance tickets. These small upgrades have made a world of difference in the long run.

And lastly, this year we pioneered the use of facial recognition to grant access at parking gates in Brazil. We believe that it is a technology that will eliminate tags, parking cards, etc.

Many gated locations are becoming barrier-less and more open as operators bring in QR codes, LPR and other easy to use, lightning-fast access methods. While going gateless makes car parks more accessible, do you think it will impact the safety and security of parking lots?

Gabriel : We strongly believe that there will be fewer human operators in parking lots. But when it comes to parking lots without any dedicated operator, it is a risk we have no intention of taking. On a recent trip to San Francisco, California, I observed several paid parking lots without operators with stolen cars and broken windows, which is just a further discredit to the model without operators.

Another crucial point is that this format depends a lot from city to city. In a capital like São Paulo, Brazil, space is scarce. It gets increasingly competitive between different segments vying for the same space, so we need to take advantage of each space every day, and for that, we need human valets at the locations.

What are some efforts you've made to make your parking location more accessible and safer for women, children, the elderly and/or people with disabilities?

Gabriel : We want to make sure that our parking lots are a friendly place for everyone - we've got demarcated spaces for the elderly, children and people with disabilities. We also have smart infrastructure, facilitating seamless vehicle access and exit without having to wait in the parking lot for a long time, making it safer for women. We always offer valet services to those who find it difficult to maneuver the vehicle on site. We also have an online course that specializes in parking etiquette of this kind for all our employees so that we can improve the services we offer.

What are your predictions for the parking industry in 2024?

Gabriel : Our forecast for next year is very good! We believe that the popularity of renewable energy and electric cars will increase significantly. We also believe that with an increasingly competitive global market in search of greater financial efficiency, the parking industry has room to grow in more locations across the world, especially those that are currently unexplored.

INFOGRAPHIC

By the Numbers: The EV Revolution

As the world accelerates towards sustainable transportation, electric vehicles (EVs) are rapidly gaining traction on a global scale. With a surge in environmental awareness and a shift towards eco-friendly alternatives, EV sales have witnessed an unprecedented rise.

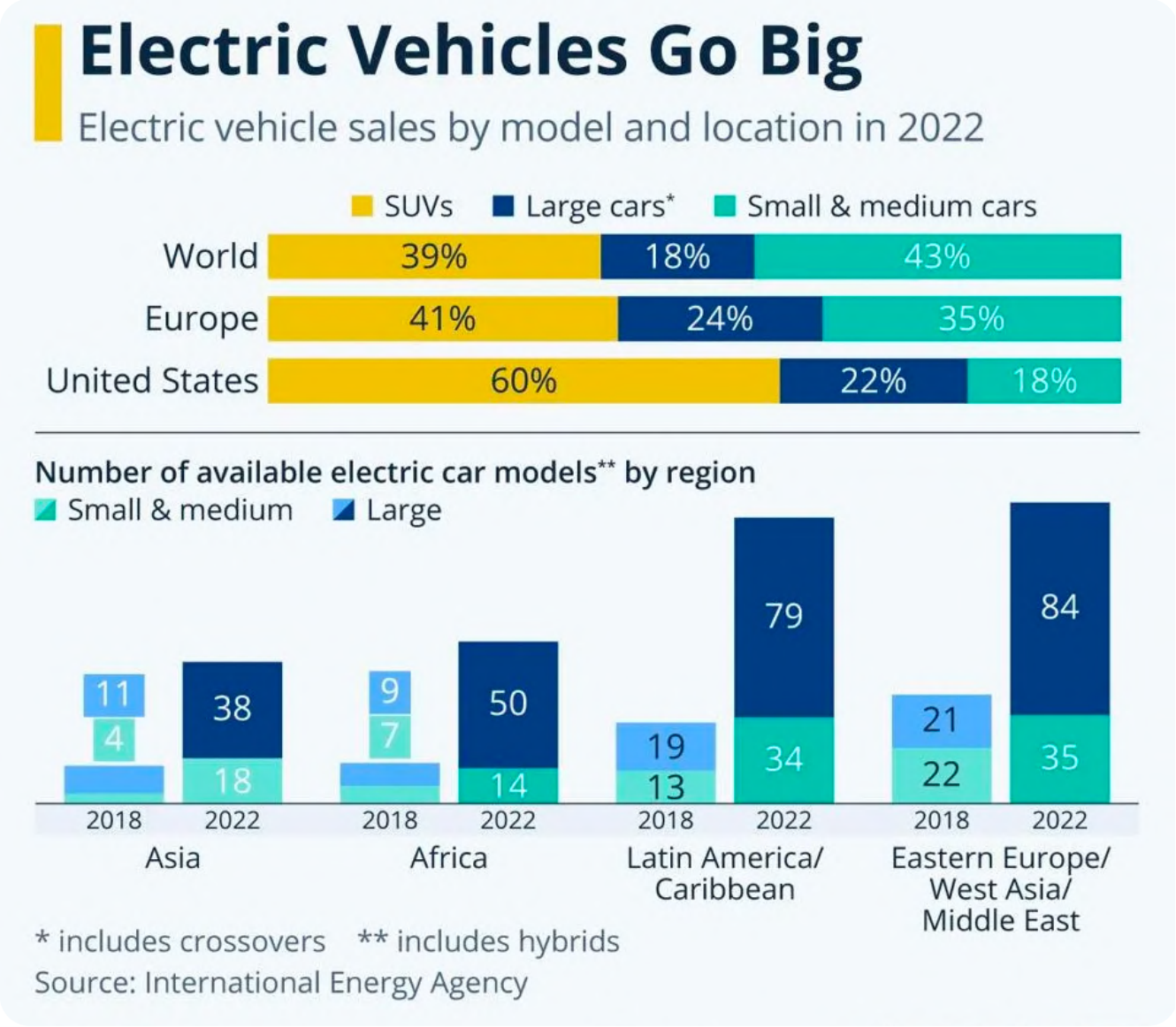


Image Source: Forbes/Statista

However, amid the electric revolution, one towering obstacle stands in the way of widespread EV adoption—the critical issue of charging infrastructure. While EVs promise a cleaner, greener future, the lack of a robust charging network poses a significant challenge that demands innovative solutions.

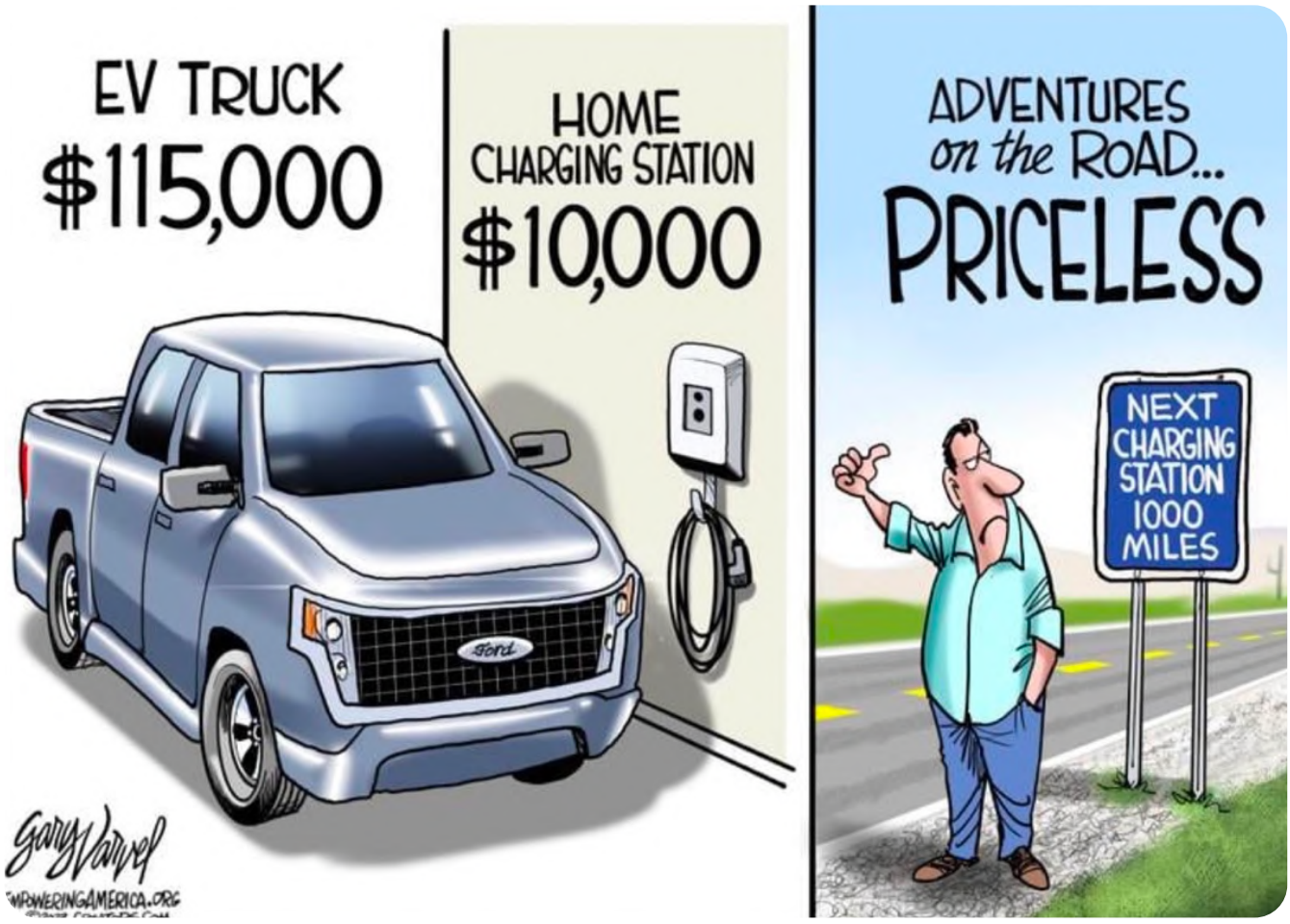


Image Source : cybertruckownersclub.com

These concerns will soon be put to rest, as we can see governments across the world investing generously in the development of charging infrastructure. This will have a profound impact on the parking industry, since most people prefer charging their car when it's parked somewhere. Read our detailed chapter on EVs and the parking industry to learn more!

ARTICLE

In Focus: QR Codes – the Quickest Way to Park

In response to the global pandemic, Quick Response (QR) codes gained prominence as a contactless alternative, particularly transforming the parking sector. This article explores the pragmatic applications of QR codes in parking, delving into their integration with mobile apps, potential to replace dedicated parking apps, security measures, corporate onboarding, and their role in parking validations.

QR Codes In Parking Apps

Integrating QR codes into mobile apps has streamlined access control in parking operations, offering a user-friendly alternative that goes hand in hand with LPR and RFID access.

In gated lots, users leverage mobile apps to scan a QR code at the entrance, gaining swift access and initiating automatic payments. Statistics from a recent parking industry survey highlight a 35% increase in user satisfaction with mobile-based access control systems.

For ungated lots, users initiate parking sessions by scanning a QR code, simplifying the payment process. This mobile-centric approach not only enhances user convenience but also contributes to operational efficiency, with a reported 25% reduction in transaction times.

Going App-less With QR Codes

For small parking operators, QR codes offer a practical solution by potentially replacing parking apps. Through a web app, users can engage in app-less, cashless QR payments, simplifying the parking experience without the need for additional downloads. This approach not only reduces operational burdens on smaller businesses but also aligns with market trends, where a recent study indicates a 20% increase in consumer preference for app-less transactions. Parkers simply scan to pay through a web app - simple, easy and no commitments.

Battling QR Fraud

The biggest argument against going app-less with QR codes is the lack of reinforcement, especially in ungated/surface lots.

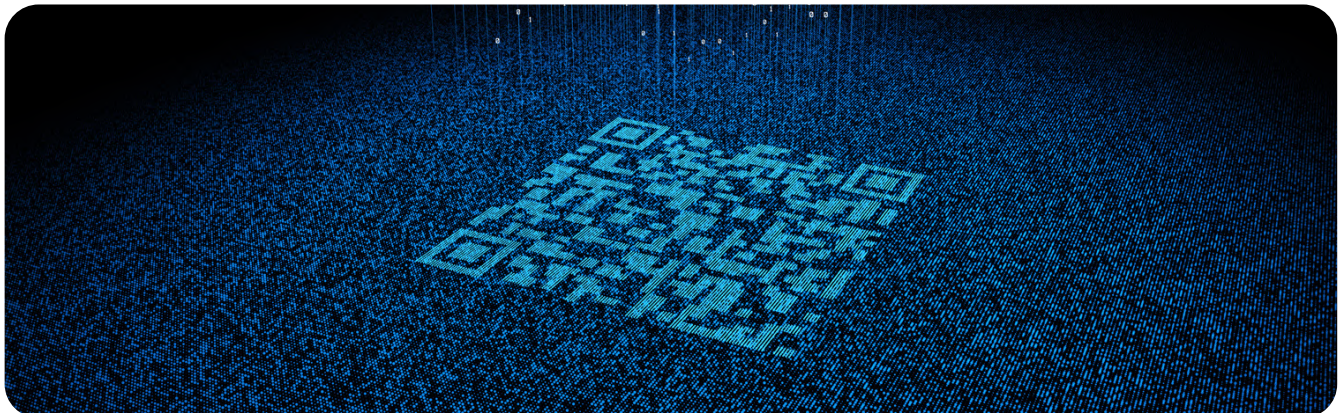
To mitigate fraud risks, encryption and time-sensitive elements within QR codes enhance security. These measures contribute to the overall integrity of QR code-based parking systems. A study by Cybersecurity Ventures reports a 47% increase in cybercrime, emphasizing the critical role of robust security measures.

Corporate Onboarding

QR codes can also help automate onboarding for parkers with corporate parking benefits. Automated emails with personalized QR codes, when scanned through parking apps, seamlessly add a corporate profile to their account. This simplifies the onboarding process and integrates corporate benefits into the parking experience.

Scan To Validate

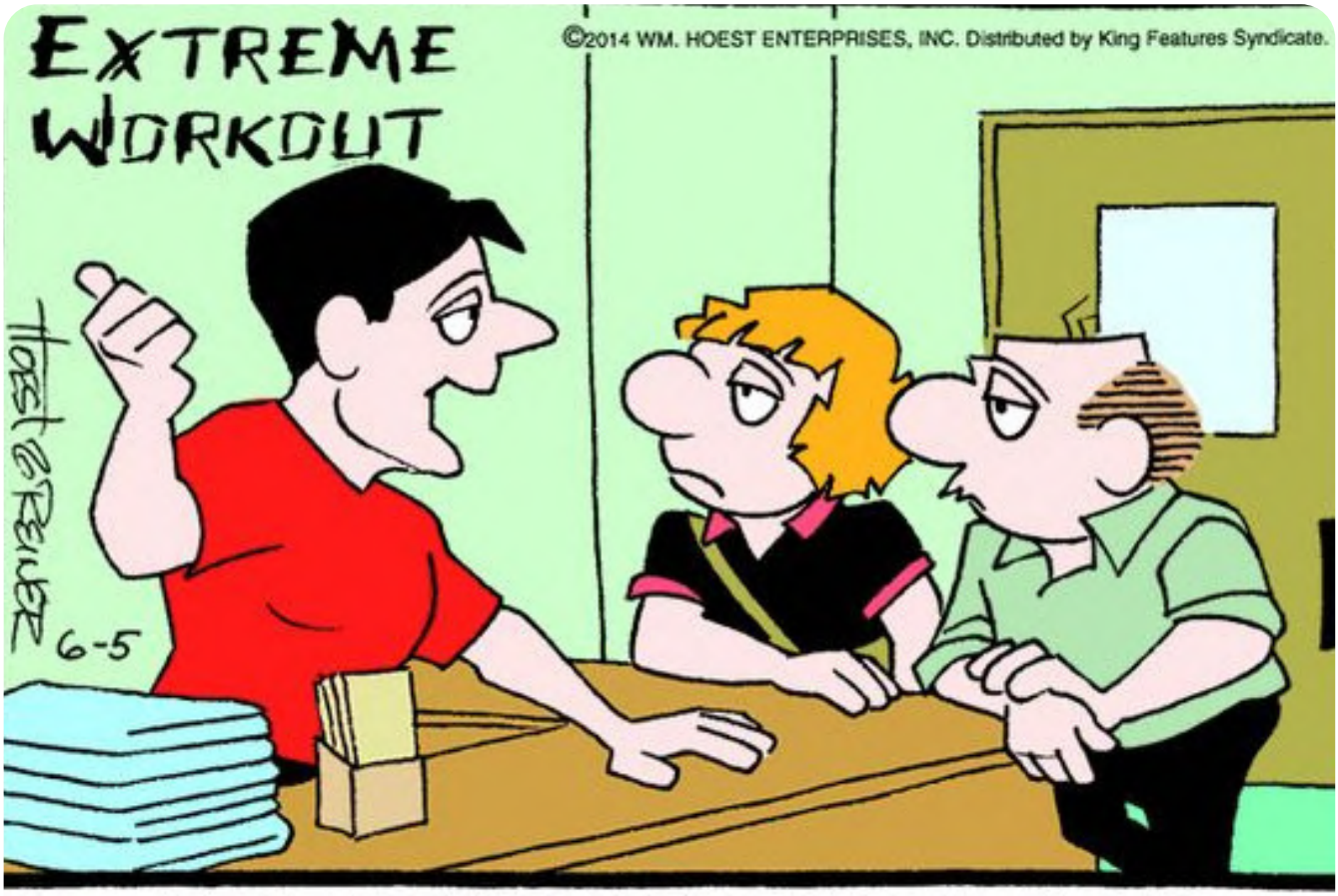
QR codes are invaluable in parking validations. Retailers implement QR code-based systems, allowing parkers to scan codes at the point of purchase to apply discounts or validate parking sessions. This integration streamlines the validation process, enhancing customer loyalty.



In Short

QR codes have become a transformative force in the parking industry, addressing modern challenges with practical solutions. From their widespread adoption during the pandemic to their applications in mobile access control, app-less parking solutions, fraud prevention, corporate onboarding, and parking validations, QR codes have reshaped the parking experience. Credible statistics underscore the importance of robust security measures in the face of rising cybercrime. Every digitized, future-proofed parking business now incorporates QR codes, driving advancements and enhancing the overall parking experience for operators and users alike.

Break time 😆



Credits : by Hoest & Reiner, W.M. Hoest Enterprises

ARTICLE

Parking Says Hello to AI

Artificial intelligence (AI) is the talk of the planet, and now it's making a significant mark on the parking industry, revolutionizing the way we perceive, access, and manage parking spaces. From AI-assisted license plate matching to the emergence of automated valet parking, the integration of intelligent systems is reshaping the entire parking experience.

AI-LP Matching Makes Parking Faster Than Ever

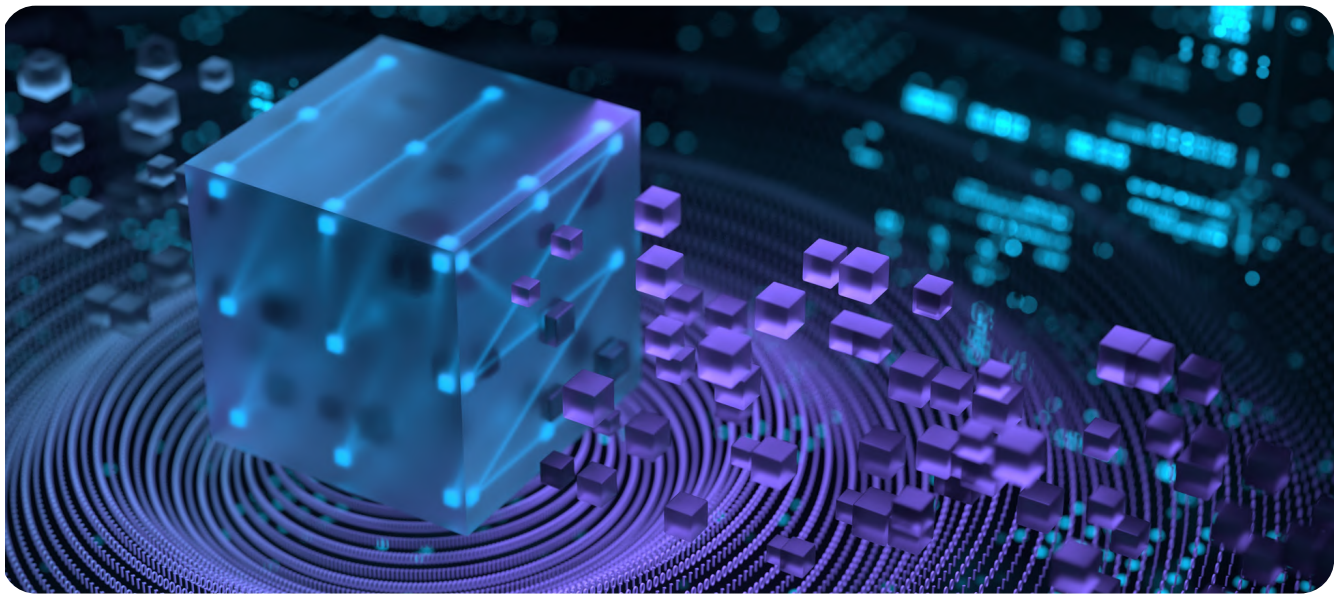
One of the most impactful applications of AI in the parking industry is how it increases the accuracy of LPR. Traditional parking management systems often rely on manual input for access control when the camera fails to pick up a license plate, leading to inefficiencies and potential errors. AI-powered license plate matching has transformed this situation.

AI algorithms, combined with high-resolution cameras and optical character recognition (OCR) technology, enable swift and accurate identification of license plates. This has streamlined entry and exit processes, eliminating the need for physical tickets or passes. Drivers can just drive in and out - the payments are automatic if they've added a card on file to the operator's database.

While this involves an interaction with the operator's smart parking app at some point of the parker's journey, it's a one-off transaction to authenticate the card - after which the parker can forget all about tickets, payments and sessions. The result is a more seamless and hands-on parking experience for users, with next to no wait time or worries.

Predictive Analytics For Parking

AI's prowess extends beyond real-time LPR - it also plays a crucial role in predictive analytics for parking optimization. Machine learning algorithms analyze historical parking data, including peak parking hours, seasonal trends, and user behavior, to forecast future demand accurately. Parking operators can use these insights to allocate resources efficiently, ensuring that parking facilities are adequately staffed and equipped during high-demand periods.

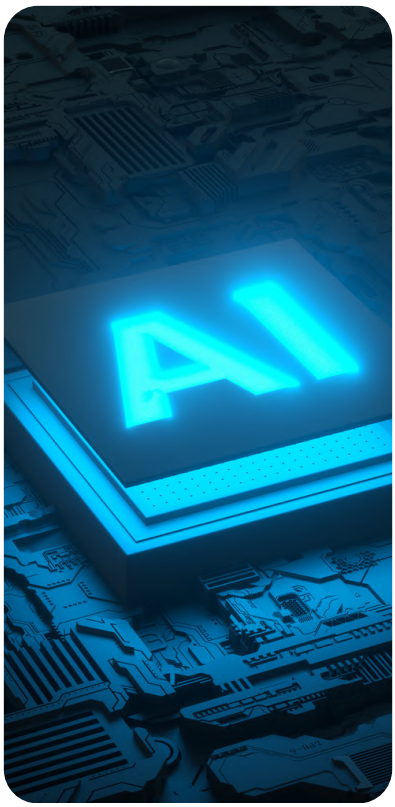


This predictive approach not only enhances the user experience by reducing the time spent searching for parking but also helps operators optimize revenue generation. By understanding and adapting to fluctuating demand patterns, parking facilities can maximize their efficiency and profitability.

What If Your Car Could Park Itself?

Self-driving cars are a controversial topic, and whether these cars can be trusted to parallel park (a skill mastered by very few) is an even bigger question. One of the most futuristic and exciting developments in the parking industry is the emergence of automated valet parking systems powered by AI.

These systems leverage advanced sensor technologies, cameras, and AI algorithms to enable vehicles to park themselves without human intervention. Automated valet parking not only eliminates the stress and time associated with finding a parking spot but also maximizes the utilization of available space.



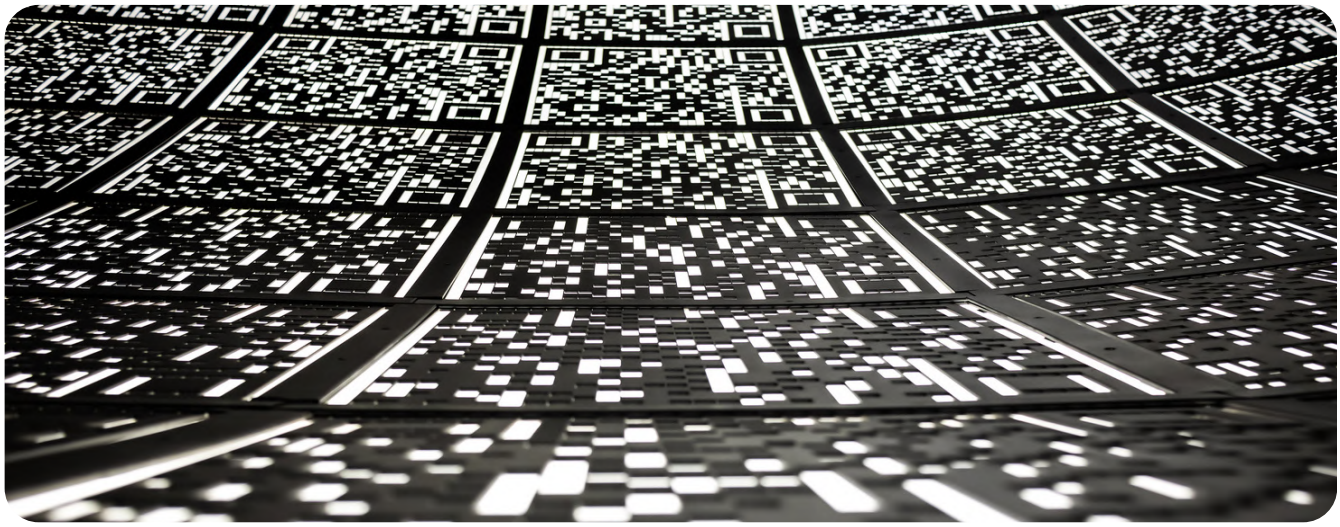
As a driver approaches a parking facility equipped with automated valet parking, the system takes over, navigating the vehicle to an available spot with precision. This not only saves time for the driver but also optimizes parking space allocation, making the most efficient use of the available area.

It might seem like something straight out of sci-fi, but a lot of places across the world have already automated valet parking. For instance, the Stuttgart Airport lets you use AVP to park and store your car, saving you time when you're in a rush to catch a flight.

While the integration of AI in the parking industry brings numerous benefits, it also presents challenges. People are hesitant to accept AI as trustworthy, especially with news of people misusing the technology proliferating the internet. Privacy concerns related to the use of facial recognition technology and license plate tracking require careful consideration. Striking a balance between technological innovation and privacy protection is crucial for operators right now.

ARTICLE

By the Numbers: QR Codes



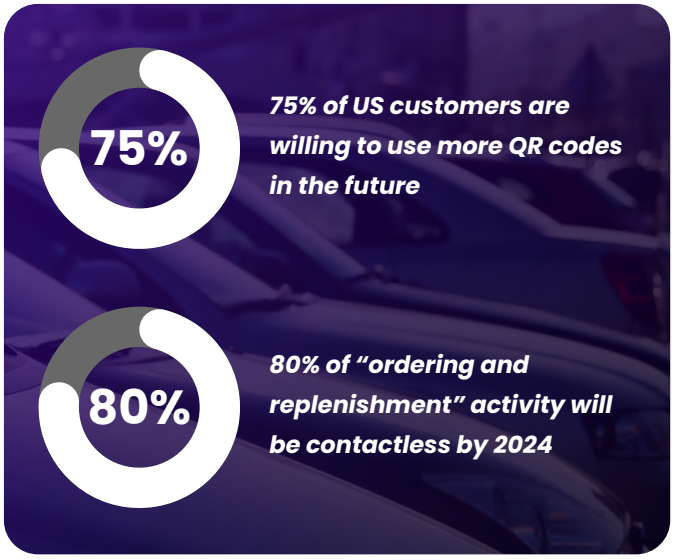
In the fast-paced digital era, Quick Response (QR) codes have emerged as a ubiquitous and powerful tool, revolutionizing the way we access information. Developed in 1994 by a Japanese automotive company, Denso Wave, to track automotive parts, QR codes have transcended their industrial origins to become an integral part of our daily lives. Today, their popularity has skyrocketed globally, driven by their versatility, convenience, and seamless integration with the digital ecosystem.

As of 202, 44.6% of internet users had scanned a QR code at least once. However, more than half of international respondents in software company Ivanti's survey didn't know that QR codes can download apps and open URLs. Cyber criminals can take advantage of this to commit QR fraud, which is a big concern for parkers - this year, there were reports of scammers setting up fraudulent QR codes in parking lots to collect card information, personal details and in most cases, full payments.

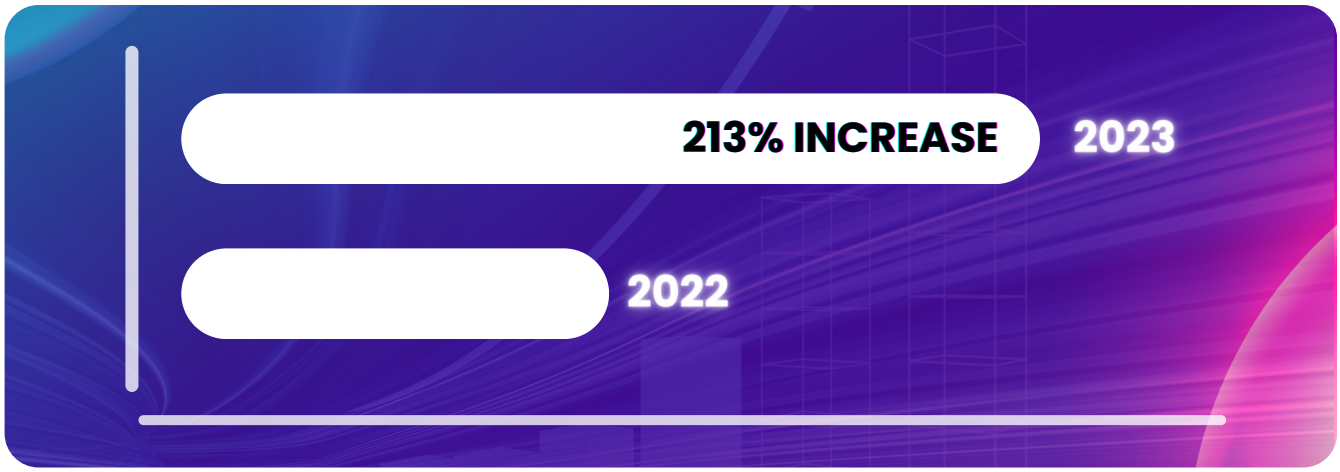
Operators can easily combat this by making sure there are regular reinforcement checks in their locations and by making their own QR code sign unique and eye-catching.

Good camera surveillance can deter and catch criminals who indulge in QR fraud.

Despite this minor challenge, the future of QR codes seems bright - more than 75% of US customers are willing to use more QR codes in the future. Gartner predicts that 80% of "ordering and replenishment" activity (i.e. reordering items to meet demand) will be contactless by 2024, largely facilitated by QR codes.



As we'll explore in the following chapters, QR Codes have made quite a difference in the parking industry - from scan-to-pay for parking to reservations, QR codes ease the links between different service providers and make communication between vendors and consumers faster and clearer.



Our Numbers Reflect The Same

In 2023, we saw a **213% increase (1.9M transactions)** in the number of parking sessions made through our scan-to-pay solution GMP QR, through which parkers can scan a QR code to pay via a white-labeled parking app.

Clearly, QR codes are here to stay, especially in an industry like parking where speed and efficiency are key to smooth operations.

Break time 😆

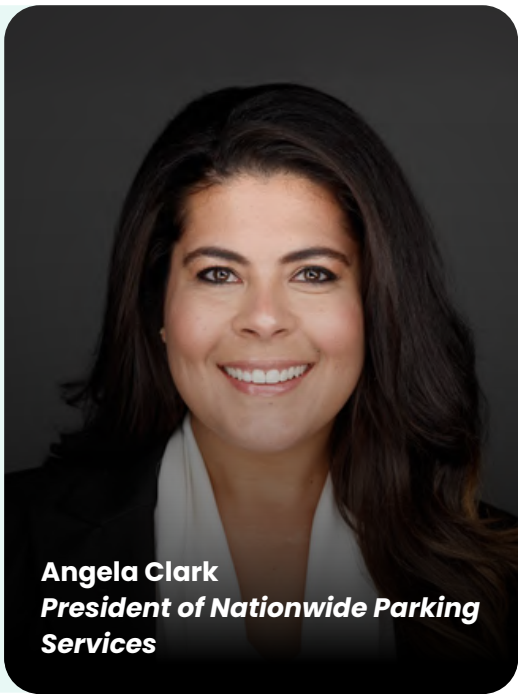
Credits : Dan Piraro

INTERVIEW

Technology will Continue to Be King

About Nationwide Parking

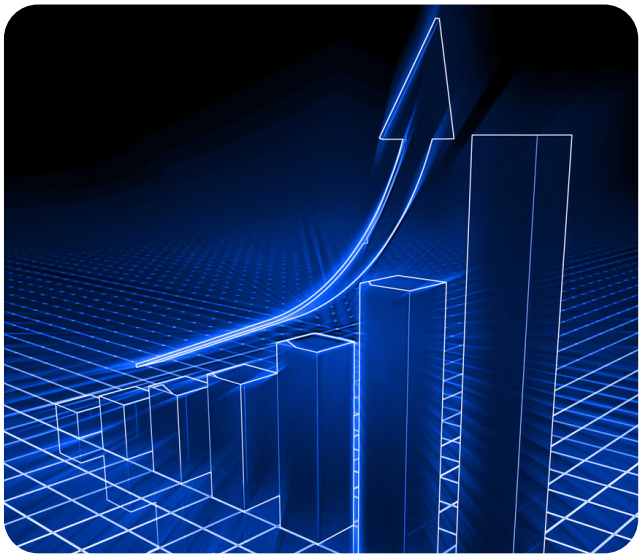
We talked to Angela Clark, the President of Nationwide Parking Services, an established name in the industry that has offered exemplary parking services for over 25 years. Nationwide Parking Services is the only minority-woman-owned parking company in Colorado.



Angela Clark
President of Nationwide Parking Services

What were the highlights of the year 2023 for your business? What are the changes and upgrades you made to your portfolio/platform and why?

Angela : Continued strategic growth and acquisition have been the highlight of our year. We constantly look for the best companies to partner with and to improve constantly. Signing up for GMP has certainly been a highlight. We are very happy with the technology and with the team, and we are looking forward to a successful partnership.



How have you incorporated eco-friendly practices into how parking works in your portfolio?

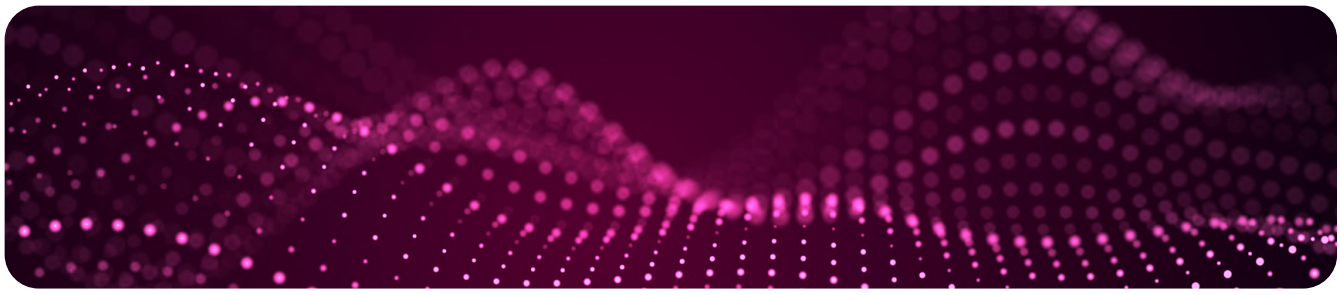
Angela : We're excited to incorporate solar energy into garages and large surface lots.

Have you started using QR codes for payments, sessions or access in your parking locations?

Angela : Yes, we use QR codes on all of our properties and hope to use them exclusively in the future. Generally, parkers are familiar with QR codes (thanks to COVID-19) and enjoy paying via touchless means. There are generational concerns with using QR codes, but by and large, they are widely accepted and used.

Many parts of the parking process now involve digitization and automation. Have you automated or digitized anything in your parking locations?

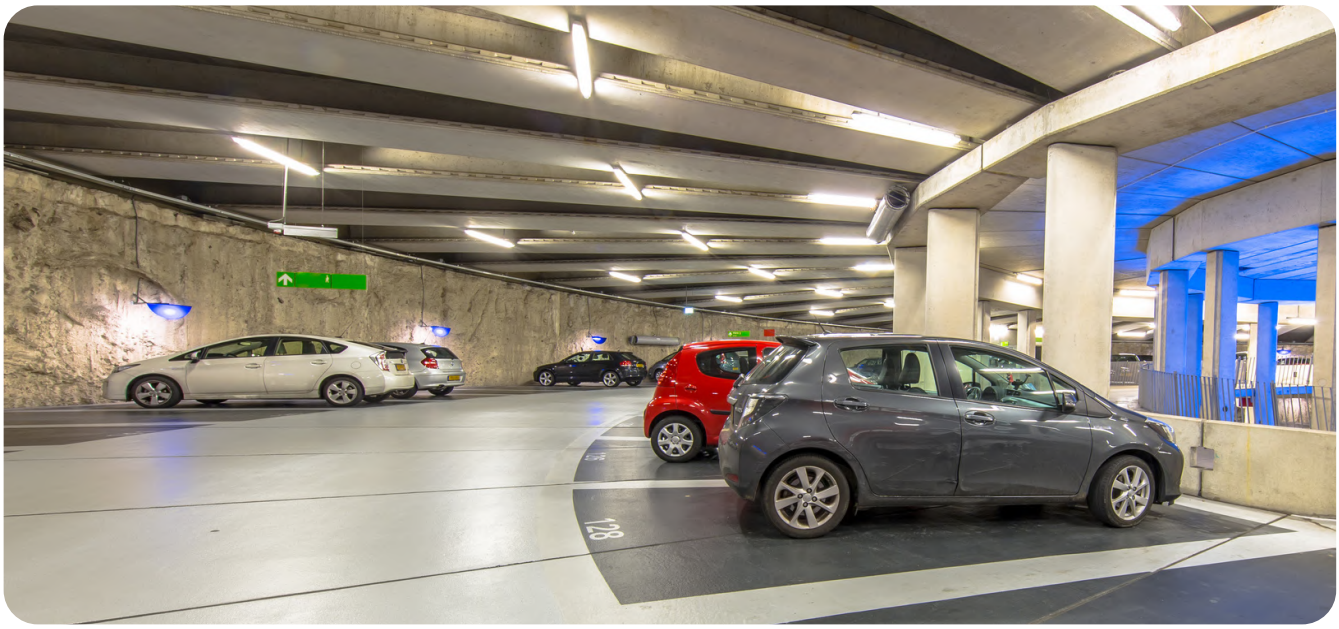
Angela : Yes. We have digitized our payment platforms, reporting, etc. Most digital parking systems are far more accessible and easier to use than legacy pay stations.



Many gated locations are becoming barrier-less and more open as operators bring in QR codes, LPR, and other easy-to-use, lightning-fast access methods. While going gateless makes car parks more accessible, do you think it will impact the safety and security of parking lots?

Angela : I think going gateless is absolutely the wave of the future. I believe gates do provide the perception of safety or might make a visitor feel that the location is more secure (even though it may not be the case).

It's important to make sure that your parking locations are equally friendly to everyone. What are some efforts you've made to make your parking location more accessible and safer for women, children, the elderly and/or people with disabilities?



Angela : All of our parking lots are up to ADA code. As a woman-led organization, the safety levels in our parking lots are of utmost importance to us. We will soon be installing additional lighting in all of our lots. Light is a great way to deter criminality and allow visitors to see every corner of your lot and any potential dangers.

What are your predictions for the parking industry in 2024?

Angela : Technology will continue to be king! Simplifying processes and reporting is something that has been a positive outgrowth for the parking industry.

ARTICLE

Making Sense of Monthlies

Parking permits have always been integral to the average car-owning commuter, streamlining the management of parking spaces and ensuring order in bustling city centres. In this article, we delve into the evolution of parking permits, the diverse types available, and how digital advancements are reshaping this essential element of modern urban living.

The Story Of The Permit

Parking permits emerged in the early 20th century to address urban congestion from the automobile boom. Initially, simple tags for organized street parking, permits have evolved with city dynamics. From paper-based proofs for general parking, they've specialized for residential, employee, and guest needs.

Technological advancements transformed permits into digital solutions, streamlining issuance and tracking. The contemporary era introduces innovations like Flexipermits, offering flexible time-based options.

In essence, parking permits mirror the constant quest to harmonize vehicle ownership's convenience with the necessity for regulated, organized parking in our ever-growing cities.

Who Uses Monthlies?

Corporate Workers

Many urban professionals rely on parking permits provided by their employers. These permits ensure convenient access to parking facilities near workplaces, streamlining the daily commute for employees. Some companies offer parking permits as part of their employee benefits package, enhancing the overall work experience and contributing to employee satisfaction.

Residential Permits

Residents in densely populated areas often require permits to park near their homes. These permits help manage limited parking spaces and prevent overcrowding in residential neighborhoods.

Guest Passes

Ensuring that visitors have access to parking is essential. Guest permits, whether physical or digital, provide a convenient solution for temporary parking needs. Guest permits have become increasingly sophisticated, allowing hosts to reserve parking spaces for their visitors. This ensures a hassle-free experience for both hosts and guests, minimizing the stress of finding suitable parking in crowded areas.

Fleet Permits

Companies managing fleets or involved in the mobility sector often require specialized permits to ensure the smooth operation and parking of their vehicles. Flexible permits allow fleets to access parking spaces as needed, ensuring optimal space utilization. This dynamic approach prevents underutilization during off-peak hours and congestion during peak times, maximizing the overall efficiency of the parking facility.

Ushering the Age of Flexible Permits

In the digital age, traditional paper permits are giving way to innovative digital solutions. Flexipermits, or digital permits sold in parking minutes, offer unprecedented flexibility. Users can purchase the exact time they need, optimizing cost and reducing waste associated with traditional permits.

Automating Permits - No More Manual AR

For corporate entities with sizable parking needs, purchasing bulk permits is a practical solution. Automated billing systems streamline the process, providing convenience for both the parking operators and the corporate clients. This not only ensures efficient management but also aids in accurate billing and accounts receivable processes.

Here's Why You Need to Launch Flexible, Digital Permits in your Location

Offering flexible parking permits to fleets, corporate entities, and residential areas is a strategic move that empowers parking operators to maximize revenue and operational efficiency.

Tailored Solutions

Flexible parking permits cater to the diverse needs of corporate clients, providing a customizable approach to address their specific parking requirements. This adaptability fosters stronger relationships, ensuring long-term partnerships and a consistent revenue flow for parking operators.

Peaceful Parking for Residents

Residential areas benefit from flexible permits by accommodating the varying parking needs of residents. This approach prevents congestion during peak hours and ensures efficient use of available parking spaces, contributing to resident satisfaction and loyalty.

Faster Fleets

Offering flexible permits to fleets, such as those in cab-hailing and logistics, optimizes space utilization. Parking operators can provide dedicated spaces or time-specific permits, enhancing the overall efficiency of the parking facility. Establishing partnerships with cab-hailing and logistics companies through flexible permits encourages long-term relationships. As fleets grow, so does their need for parking spaces. Becoming a reliable parking solution for these businesses can lead to extended contracts and mutually beneficial partnerships.

To Save The Planet

Say no to paper tickets and to congestion caused by people scouring the area for a parking spot! Parking operators can align with the growing emphasis on sustainability by offering specialized permits for environmentally friendly vehicles within corporate and residential areas. This not only supports eco-friendly initiatives but also attracts clients with a commitment to green practices.

In essence, selling flexible parking permits to fleets, corporate organizations, and residential areas empowers parking operators to tailor their services, build lasting partnerships, and adapt to the evolving needs of diverse clients, ultimately contributing to increased revenue and operational success.

Parking permits, once a simple regulatory tool, have evolved into sophisticated solutions catering to the diverse needs of urban dwellers and businesses. From regulating street parking to offering flexible digital options, the world of parking permits continues to adapt, ensuring a smoother and more efficient experience in our increasingly complex urban environments.

ARTICLE

Going Green: A Mini-Guide for Parking Operators

Retrofitting With Gate Kits

Rather than investing in entirely new and resource-intensive parking equipment, consider the eco-friendly option of retrofitting your parking lot with IoT gate kits.

Gate kits are cost-effective, Plug-N-Play alternatives that can be easily integrated into existing infrastructure. This approach minimizes waste by repurposing and upgrading your legacy equipment, reducing the environmental impact associated with manufacturing and disposing of new hardware. Retrofitting not only saves resources but also aligns with the principles of sustainability and responsible resource management.

Launch EV Charging As a Service

Embrace the EV revolution by installing EV charging stations in your parking lot. With the rise in popularity of electric vehicles, providing charging infrastructure encourages eco-friendly transportation choices.

This not only supports the reduction of greenhouse gas emissions but also attracts environmentally conscious customers. Collaborating with local electric utility providers or government incentives can further facilitate the adoption of EV charging infrastructure, contributing to a greener and more sustainable urban environment.

Installing EVs is also a great way to future-proof your business - with more EVs on the road than ever, many parkers will choose your locations just because it has the added EV advantage.

Incorporating Green Spaces

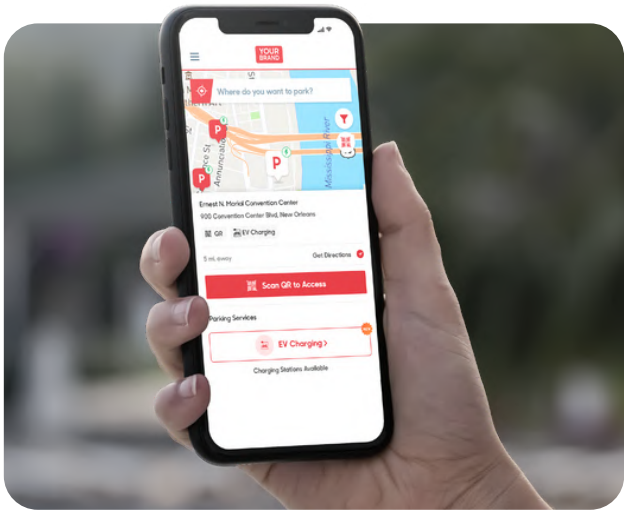
Integrating green spaces within your parking lot is a practical way to promote groundwater seepage and enhance overall environmental sustainability. Instead of covering the entire area with impermeable surfaces, designate patches of grass or permeable surfaces that allow rainwater to infiltrate the soil. This reduces surface runoff, promotes natural filtration, and helps replenish groundwater resources. Plus, green spaces make your surface lots look prettier - it never hurts to make your parking lot look more attractive to people passing by.

Paperless Is Better

Reduce waste and minimize environmental impact by implementing paperless smart parking systems. Traditional parking systems often rely on paper tickets or permits, contributing to unnecessary paper consumption and waste.

Transitioning to digital, mobile-friendly solutions like a smart parking app not only streamlines the parking process but also reduces the need for physical tickets.

Smart parking apps also provide real-time information on available parking spaces, reducing cruising time and vehicle emissions. The faster your customers park, the less time they spend driving around looking for parking and the less carbon emissions they produce - faster parking is greener parking.



Energy-Efficient Lighting

Upgrade your parking lot's lighting infrastructure to energy-efficient alternatives, such as LED lighting. Traditional lighting systems consume significant amounts of energy and contribute to higher electricity bills. LED lights are energy-efficient with a longer lifespan, reducing the frequency of replacements and associated waste.

Additionally, consider installing motion sensor technology to ensure that lights are only active when needed, further optimizing energy consumption and lowering environmental impact.

Go Smart to Go Green

Transforming your parking lot into an eco-friendly space involves a combination of thoughtful initiatives that prioritize sustainability, energy efficiency, and responsible resource management.

The mobility industry has had a long-standing bad reputation of contributing to pollution and environmental degradation - going green with these small steps helps us make up for the harm we've done and to get ready for a future that's cleaner, smarter, and better for the planet.

Break time 😂

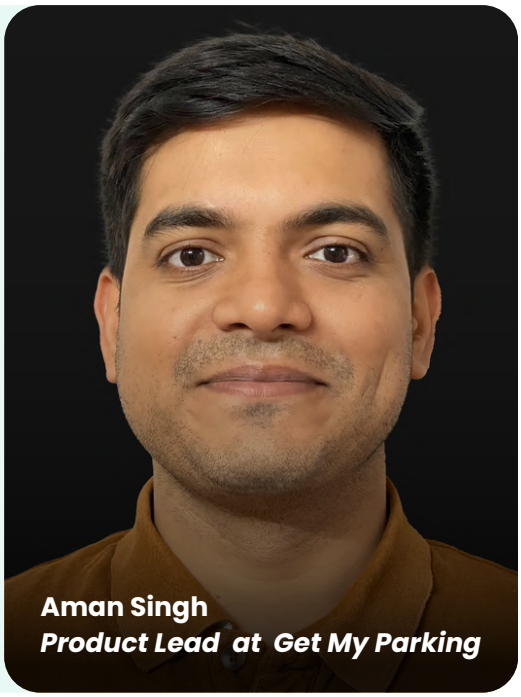
Credits : sayingimages.com

ARTICLE

Breaking Through Silos: Privacy and Data Concerns in Parking AI

Get My Parking's AI Expert

We talked to Aman Singh, our resident parking AI expert about the true potential of intelligent parking systems, the un-siloing and standardizing of parking data and the limitless possibilities that come with artificial intelligence.



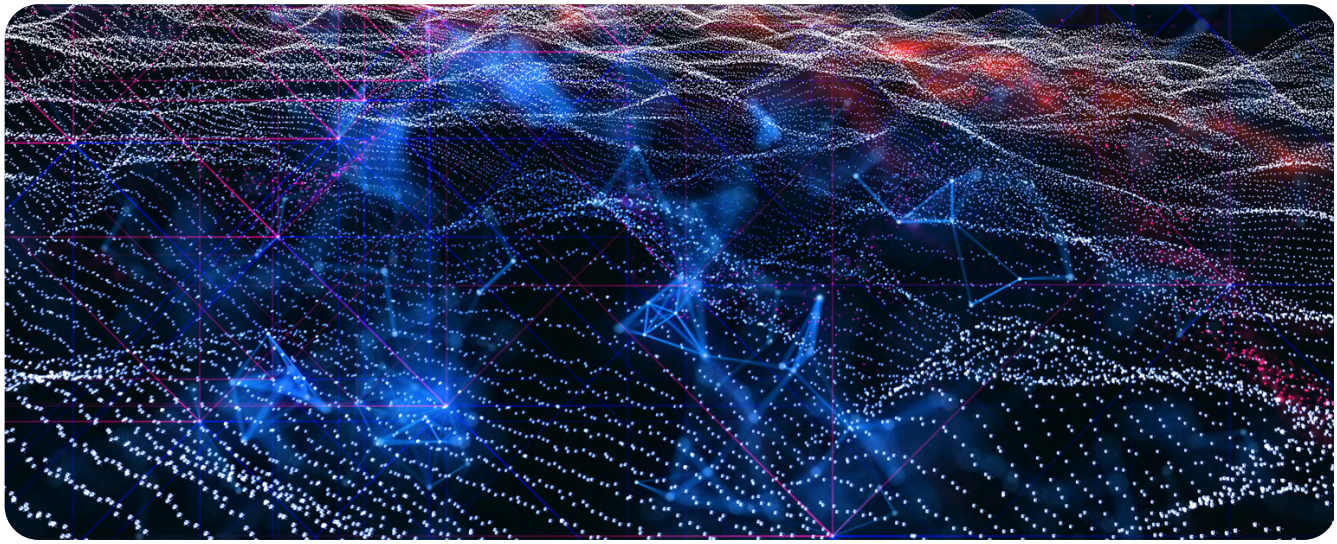
Aman Singh
Product Lead at Get My Parking

In an era where we're finding an infinite number of ways to involve artificial intelligence in our daily lives, even the simple process of parking is undergoing a transformative evolution. From smart sensors optimizing urban spaces to automated valet services, AI is reshaping the way we navigate and utilize parking facilities.

The application of AI in parking has been limited probably because of the nature of the industry, which in no way indicates the limits of what it can do for parking. So far, we've been using AI mostly for access control, to identify patterns in plate misreads and to increase LPR accuracy.

AI can do way more than just LPR for the parking industry, but there are a few hurdles we need to overcome before we can use it to its full potential.

AI and Parking Data



Above all, AI needs data to identify patterns and behaviors to make the right suggestions. As with most issues that concern data, there are a few questions that industry experts are still grappling with - how much data do you collect and how? Where do we store this data? What is the granularity and variety in data, and how much do we discard? How much do we share?

These questions aren't easy to answer, so let's look at an example.

Let's take Manhattan, New York. Parking can get quite nightmarish in this area, especially during rush hour. If we had all the data from every parking location in Manhattan, we could do so much more in terms of traffic management by redirecting people to the right parking locations, taking cars off the road.

Today, parkers get occupancy data through operator apps, which only report on the locations owned by individual operators. AI can be used to identify empty spaces and inform the user whether there's a chance to get a free spot.

Of course, for this information to be truly useful, the parker needs to know the total number of all the parking spots available in a certain area, regardless of who the operator is. The full picture can only be seen if data from all locations is available to the public and all parking platforms. However multiple operators run the parking lots in the city, so the data isn't shareable or public.

This is a limitation to any AI parking system in terms of what it can know and recommend. Once the data has been made available, AI programs can recommend the best and most affordable spots to drivers.

While AI in parking is a hot new idea with some great results, we're only still scratching the surface because the data is siloed. Operators do not or cannot share their parking data because of limitations of their data infrastructure or because of their privacy rules.

There would be many benefits to having a common parking data ecosystem. With the right information, AI could elevate dynamic pricing and help operators compete better, streamline business processes and increase profits. Unfortunately, this is something that the industry has to come together to figure out.

One of the biggest challenges to unsiloing data is figuring out the integration and interoperability of multiple tech stacks. We have hundreds of companies in parking who are all working on solving the same problems. They all have their own ways of working with data - how will this data flow into each other's buckets? How do we make integrations seamless?

A step in the right direction is the Alliance of Parking Data Standards (APDS), which is a non-profit organization that helps develop, promote, manage and maintain a uniform global standard to share parking data between platforms. It is a consensus-built international standard, establishing a common language for data elements and definitions in parking and mobility. The APDS is a great way to facilitate seamless integration, compatibility and communication between parking entities, the automotive industry, IT developers, map/app providers, etc.

AI and Parking Security

Taking parking data out of its silos and publicizing it comes with its complications. Mishandling license plate data can be a threat to individual privacy. While data is secure in an encrypted cloud storage structure, it may not be safe in physical databases and devices at the location.

Apps that track license plate information can be misused to track someone's location if the right rules and regulations aren't in place. There was an incident where a woman's ex-partner kept tabs on her whereabouts using a public website that allowed him to track every instance where her plate number had been read by an LPR camera.

While we should push for data to be publicized, there should be reinforcements in place that prevent the public from misusing sensitive information. The data should also be protected from possible leaks since license plates, credit card information, and personal details like addresses are all collected and linked in a parking ecosystem.

However, AI can also help operators amp up their security measures. There are smart cameras available that offer anomaly detection, creating alerts on human movement, fire, and noise. These can alert support staff to get rid of squatters or other disturbances in closed parking spaces like garages. This information can be relayed to customers through their apps, along with AI suggestions for alternate locations to park.

These cameras also help us track who gets in through pedestrian doors. It adds a layer of protection to make sure only the authorized people have access to parking locations. With the help of AI, centralized management can be streamlined so that one control center can monitor more than 40 locations, offering a layered approach to how data is processed and alerts are sent out.

AI Can Improve Parking Operations

Close tickets faster

AI can really streamline customer support - we've seen great results with it at GMP. Our AI helps support teams fix and close sessions faster. The process involves pattern matching, string matching and building heuristics based on parking behavior and hardware behavior. This helps us bring in large amounts of data which we convert to intelligence, which we use in real-time to process and close sessions. For example, if a parker is stuck at an exit lane, the system can recommend five possible methods of exit to the support executive based on the traffic and the pedestrian behavior.

Setting up AI chatbots on parking websites and apps with rule-based solution sets and operational procedures can reduce the time taken to receive and close support tickets.

If used right, AI can help parking businesses sell, manage and operate better.

No more misreads

The AI also helps us close sessions where the camera misreads the plate and the gate doesn't open. Based on license plate images from the user's history, AI corrects the misread, verifies the number plate, and opens the gate. This process is invisible to the user and happens super-fast - the system repairs the misread using AI-assist, and the gates open for the parker.

Push the right product

The AI also helps us close sessions where the camera misreads the plate and the gate doesn't open. Based on license plate images from the user's history, AI corrects the misread, verifies the number plate, and opens the gate. This process is invisible to the user and happens superfast - the system repairs the misread using AI-assist and the gates open for the parker.

A system that adapts to earn more

Unlike e-commerce or other industries, the problems in the mobility and parking industry are very physical. It's highly likely that there's a car with a strange license plate that your camera can't read.

Or there could be a thunderstorm that can change your whole day - the plates become harder to read, more cars come in to get off the road and into shelter. Your parking system's ability to identify and adapt to these physical factors determines how much revenue you make.

A clever AI system can recognize physical data points like the weather or increased traffic and adjust the pricings accordingly. AI-assisted LPR can make sure all the number plates are read based on its history, even if the cameras are fogged up. If the system has access to public data from traffic cameras and road sensors, it can make even better administrative decisions. With the right AI in place, a thunderstorm could earn you double the revenue.

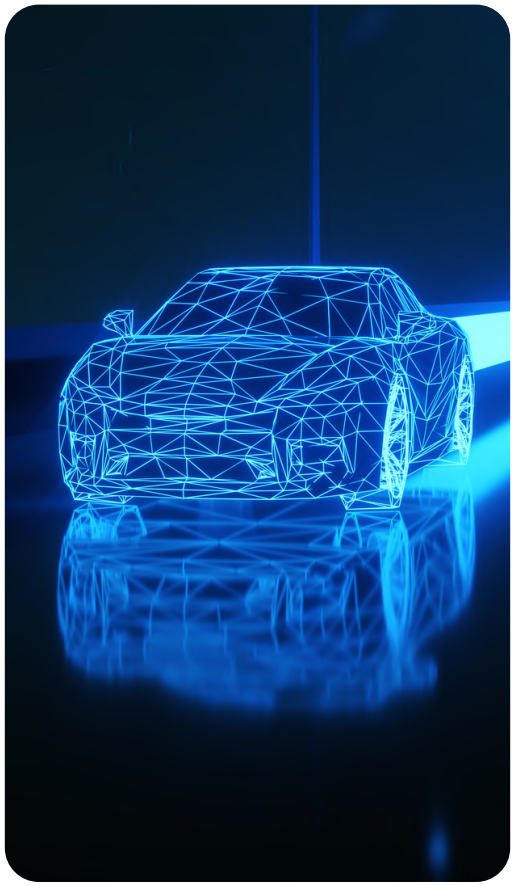
AI and Self-Driving Cars

The world has been talking about self-driving cars for a while now. The questions for the parking industry are: what would a self-driving car do when it's not on the roads? How would it know how and where to park? How much information is available to the car to know what the best lot is nearby with the right pricing and free space?

There's a lot of discussion about the car-as-a-wallet concept, where the payment method is linked to the car and its license plate instead of the user. The car is detected with LPR/Fastag/Bluetooth and the payment is instantaneous and automatic. But for the car to make the right decisions and end up in the right spot, the ecosystem needs to integrate several stakeholders and their databases. We have a long way to go with this concept, but it's definitely an interesting space to watch out for.

AI Is Here To Stay

Looking ahead, the future of AI in parking holds exciting possibilities. Continued advancements in machine learning, sensor technologies, and connectivity are likely to fuel further innovation.



We can anticipate more sophisticated AI applications, increased automation, and enhanced user experiences as the parking industry continues to evolve in tandem with the digital age. The mark that AI is making on parking is not just a technological advancement; it's a transformative journey towards a more intelligent, efficient, and user-friendly parking ecosystem.

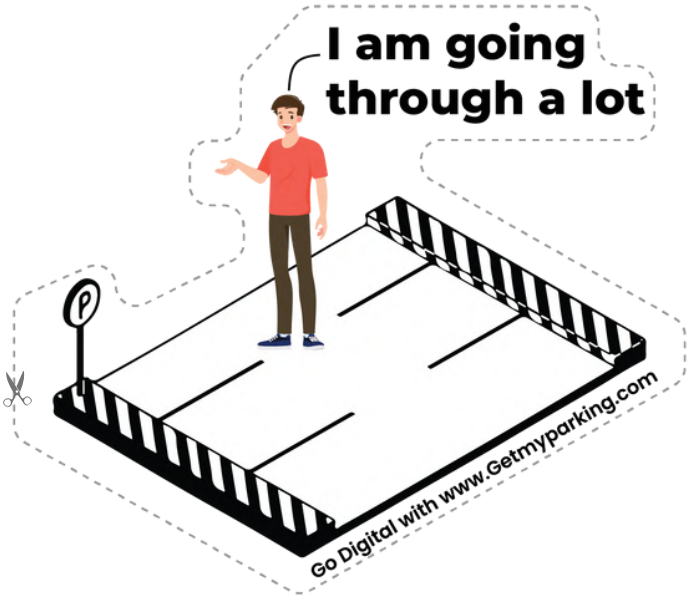
See You In 2025!

The parking industry is approaching a tipping point. Every car park now has the chance to become a full-fledged mobility hub where many businesses and services coexist, provided the operators take the initiative to welcome cutting-edge parking technologies into the picture. With QR codes, artificial intelligence and EV charging becoming popular within the industry, we can say for sure that the future of parking is digital.

We hope you're excited for 2024 and all its innovations, breakthroughs, and challenges - see you next year!

Stickers

PRINT THIS ON ANY ADHESIVE/STICKY PAPER AND CUT THEM TO PASTE ON YOUR GADGETS



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Get My Parking can assist you throughout your digitization journey.

Contact us:

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THE PARKING INDUSTRY YEARBOOK 2024

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