**TRANSPORT'S
BRIGHT
HORIZONS**

REPORT SERIES:

TICKETING
& PAYMENTS

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Contents

Welcome

Welcome to the first instalment of a new report series, brought to you exclusively by *Intelligent Transport*. As you may have previously seen, at the end of 2023, we announced that we would no longer be producing our print magazine, following the decision to become an exclusively digital offering. This announcement was part of our commitment to grow and move with the industry that we work within and, as public transport adapts to become more intelligent, we are also doing the same. Through our *Transport's Bright Horizons Report Series*, we will be bringing you all of the latest innovations and developments that are currently underway in some of the most vital areas of the industry – over the course of 2024, our reports will focus on: ticketing and payments; sustainable mobility and air quality; on-demand and demand-responsive transport; data; transport technology; passenger experience; and planning and scheduling. Packed with interactive content and deep insights, this report series will be an indispensable resource and will equip you with the knowledge to shape the future of the public transport sector.

Ticketing and payments

Ticketing and payment offerings have evolved continuously as the digitalisation of the public transport industry increases pace. Whilst a range of technologies are now available and utilised across the sector – such as QR codes and NFC technology – and though blockchain and cryptocurrencies are emerging, there is no doubt that contactless payments and mobile ticketing are currently dominating the ticketing space, providing convenience and flexibility, and subsequently making the paper ticket increasingly more obsolete.

Within this report, leading industry experts take the opportunity to consider the current outlook for the future of ticketing and payments within the public transport space, and shine a spotlight on the merits of the various types of technology that are in play. From the unique but exciting location of Las Vegas; to industry-leading regions across the UK; before ending in Luxembourg, one of the world's smallest but innovative countries, this exclusive report takes you on a journey that we hopes enlightens you in the face of an ever-changing industry. Learn from insightful case studies from across the globe, and find out more about how the latest innovations in ticketing and payments can help you to not only improve operational efficiency, but also improve the passenger journey.

Leah Hockley

Editor,
Intelligent Transport

A layered approach to transit payment options increases convenience and efficiency for Southern Nevada customers

© Regional Transportation Commission of Southern Nevada

M.J. Maynard, CEO of the Regional Transportation Commission of Southern Nevada, outlines RTC's transformative approach to fare payment, highlighting strategic partnerships, a focus on customer needs and ongoing plans for innovation and expansion to meet the evolving demands of Las Vegas' transportation landscape.

Las Vegas is a town that is always in motion. What once was a dusty outcrop in the middle of the desert is now the entertainment and sports capital of the world, housing over 2.3 million residents and welcoming 40+ million visitors in 2023. With this ever-evolving community, every industry, including transportation, must be nimble and ready to adapt to the latest technology. As the transportation agency and public transit provider for this one-of-a-kind community, the Regional Transportation Commission of Southern Nevada (RTC) serves a diverse audience, requiring creative, and sometimes out-of-the-ordinary, solutions. RTC has approached fare payment with this perspective and created convenient, effective options for customers while streamlining the agency's operational efficiency and cost savings.

Moving forward with mobile

For many years, hopping on transit meant having exact change or purchasing a paper pass in advance. Gone are those days, as transit agencies have moved to more sophisticated payment options that provide greater convenience, affordability and sustainability.

When the industry began to move away from paper tickets and passes, many transit agencies opted for reloadable fare cards. RTC bucked the trend and launched the rideRTC mobile app in 2016 for its convenience and cost-effectiveness. A mobile app is all-inclusive and enables customers to purchase transit passes, plan their trip and ▶

find their bus, all from their phone – something that appeals to residents and visitors alike.

Like many pilot projects, we tested several platforms until we found one that met our needs. We were one of the first transit agencies to use Masabi, whose other platforms we were using at the time, and that decision saved us time and money as we worked toward a mobile app solution.

Taking a layered approach

While the rideRTC app has been extremely successful with more than two million downloads and more than 6.6 million passes purchased to date, the underlying process is a closed-loop payment system, which requires customers to have accounts with pre-loaded funds while our agency handles monetary transactions internally.

Our goal was to migrate to an open-loop payment system, where customers could use other forms of payment like a credit card to purchase their fare. Customers would not need the app to pay, creating more convenience and improving the customer experience while generating cost savings for RTC. We took a layered approach to meeting that goal by building the mobile app first, then adding new features under the umbrella of a 'Tap & Go' tagline, to meet the needs of our customers.

In 2020, at the height of the COVID-19 pandemic and in partnership with Masabi and InComm Payments, we introduced a contactless payment option for passengers who prefer to use cash or do not have bank accounts. Transit customers could add cash to their account at 350 partner locations in Southern Nevada and then use a QR code to pay their fare on the bus. At that time, more than 60% of RTC riders paid their fare with cash. This was a quick, convenient and contactless method of payment.

In 2021, we received a $500,000 COVID-19 Research Demonstration Grant from the Federal Transit Administration (FTA), which was a pivotal moment in our migration to an open-loop payment system. This funding allowed us to procure and install new Europay, MasterCard and Visa (EMV) certified electronic validators on our vehicles. Installed in 2022, these validators helped to grow our contactless payment options to improve health measures, reduce passenger-loading times and increase overall operational efficiency.

In 2023, we launched account-based ticketing (ABT) offering a single-ride payment option in rideRTC. Customers could add funds to their mobile account via credit card or cash, use their account QR code and pay for a single ride, with the fare deducted from their in-app wallet. This feature is ideal for riders who take a single trip or have flexible travel plans, and especially for visitors using the 24-hour Deuce on the Strip service.

Several months later, we introduced a completely contactless option where passengers can pay for their single ride fare with a debit/credit card, mobile wallet – such as Apple Pay or Google Pay – or a smart watch. While not connected to the rideRTC mobile ▶

> **Our goal was to migrate to an open-loop payment system, where customers could use other forms of payment like a credit card to purchase their fare**

M.J. Maynard

M.J. is the CEO of the Regional Transportation Commission of Southern Nevada. Recognising that mobility shapes communities and economies, M.J. proudly leads RTC as connector of the region's business sector, its more than 2.3 million residents and 40+ million annual visitors. She is passionate about building and sustaining a transportation system with a robust roadway network and efficient public transit that connects the Las Vegas Valley, improves air quality and creates economic opportunities for people and businesses.

app, we did again use an existing platform provided by Masabi to save time and resources. For customers, the advantages are enormous. It is convenient and easy, especially for tourists who do not need to download an app to ride.

While contactless payment is still new, we are encouraged by the initial data. Since the service launched in mid-December 2023, we have seen a steady increase in revenue. In its first full month, there was a 14% reduction in two-hour pass purchases from ticket vending machines located on the Strip. Additionally, on NFL Super Bowl on 11 February 2024, Tap & Go usage jumped by 60% on the Strip.

Just the beginning

We're excited about our progression in fare payment, but we know that more can be done to make it easier for both locals and tourists.

We look forward to building upon our Tap & Go platform and replacing paper passes with a reloadable card. We are partnering with social service providers to find a way to load fares directly onto a passenger's account. This will greatly help lower-income riders, where transportation may already be challenging, by creating a seamless system of benefits and eliminating a trip to a government-assistance office. Finally, we are evaluating ways to manage fare payment for larger groups by consolidatingaccounts.

The improvements derived from open-loop payment options are immeasurable, as we offer a better experience for customers with contactless options, reducing passenger-loading times and increasing overall convenience. We are excited to continue evolving alongside our community, testing new technology and creating the ultimate customer experience while improving the operational efficiency of our fare payment system. 🔊

> **The improvements derived from open-loop payment options are immeasurable, as we offer a better experience for customers with contactless options, reducing passenger-loading times and increasing overall convenience**

Ticketing transformation:
From open payments in Las Vegas to projects with National Express West Midlands and Transport for Wales

Scott Mazick of RTC, NXWM's *Stuart McLay*, *Gareth Marsh* from TfW and Masabi's *James Gooch* offer their insight into the adoption of innovative, best-in-class open and contactless ticketing and payment solutions, and discuss how these new implementations have delivered a range of benefits to both the operators and their passengers.

The move towards innovative, modular fare payment solutions is transforming public transportation, making it easier for authorities and operators to launch new systems quickly and cost-effectively, leveraging the considerable benefits offered by Software-as-a-Service (SaaS) platforms over and above bespoke design-build solutions.

At the same time, we are witnessing a shift towards open and contactless solutions, driven by the need to deliver best-in-class technology and the evolving passenger preferences for convenient transactions via a simple tap of a mobile device or payment card.

This article shines a spotlight on three innovative deployments with transport operators spanning the globe, all powered by Masabi's Justride enterprise platform. ▶

Open payments success with the Regional Transportation Commission of Southern Nevada

The Regional Transportation Commission of Southern Nevada (RTC) oversees transportation in Las Vegas, managing 39 routes throughout the valley and on the world-famous Las Vegas Strip that accommodate over 153,000 daily journeys. RTC has modernised its ticketing system by working with Masabi, shifting from cash-only transactions to mobile ticketing via the rideRTC app. This evolution includes cash digitisation; ticketing integrations with popular apps like Uber and Transit; and the launch of Account-Based Ticketing (ABT).

In December 2023, Masabi and RTC introduced open payments, allowing contactless cards and mobile wallets to be used to board the bus. Now, people living, working and visiting Las Vegas can simply tap to ride the bus without purchasing tickets or selecting fares. Masabi collaborated with partners Visa, utilising the Visa Acceptance Platform, and Worldpay to deliver a pre-integrated and pre-certified solution that can be used by other agencies, making the adoption of open payments much easier to deliver.

Since the launch of open payments, RTC has reported a steady increase in revenue and a 14% reduction in two-hour passes purchased from ticket vending machines located on the Las Vegas Strip.

RTC remains committed to innovation, aiming to introduce further functionality to enhance passenger convenience. Through continued collaboration with Masabi, leveraging its platform and Fare Payments-as-a-Service approach, RTC ensures the provision of cutting-edge ticketing technology, sustaining its position as a leader in transit technology.

SCOTT MAZICK, *Senior Director of IT at RTC, said:*

" **Open payments provide the most straightforward experience by enabling riders to simply tap a card or phone to pay and ride. Working in conjunction with Masabi, we have continually evolved our offering, delivering innovation after innovation and providing the best solution possible to address the needs of our diverse customer base. We look forward to continuing this trend.** "

Mobile ticketing mastery with National Express West Midlands

National Express West Midlands (NXWM) is a major UK bus operator with a fleet of over 1,400 buses, completing around four million passenger journeys each week across Birmingham, Solihull, Dudley, Sandwell, Walsall, Wolverhampton and Coventry. The company recognised the need to modernise its ticketing

system, which had lacked the flexibility to adapt and keep pace with evolving consumer and technological trends.

Collaborating with Masabi, NXWM embarked on a journey to modernise its ticketing infrastructure and enhance the passenger experience through advanced digital solutions. Beginning in 2016 with the launch of the NXBus mTicket app, this transformed the customer ticket purchasing process. This success led to a 2018 smart ticketing scheme ▶

" **Working in conjunction with Masabi, we have continually evolved our offering, delivering innovation after innovation and providing the best solution possible** "

for students, by offering easy access to discounted or fully funded travel passes through the app. In 2021, NXWM then introduced a cash digitisation initiative, enabling cash ticket purchases at over 1,300 retail locations through a partnership with Payzone.

2023 saw the introduction of the UK's largest on-bus QR code mobile ticket scanning solution, which meant that more than 43 million bus trips were made easier and more efficient. The new technology helped to reduce driver effort by 25%, while also reducing ticket fraud

and passenger boarding times. More recently, strategic partnerships with Distribusion and Uber have expanded NXWM's reach by integrating its bus tickets into familiar, popular platforms, simplifying the customer experience with journey planning and ticket purchasing.

Today, passengers can purchase tickets through the NXBus mTicket app, the Uber app or while booking their trip online thanks to the Distribusion partnership. All of these initiatives – along with expanding cash purchasing options, scanning and student support programmes – mean that one

in four customers are travelling with an mTicket using Masabi's Justride platform.

The collaboration between NXWM, Masabi and Masabi's partners exemplifies the power of partnerships in revolutionising public transportation and creating a smarter, more efficient transport ecosystem.

STUART MCLAY, *Head of Retail at National Express West Midlands, said:*

> **The success of this initiative is the result of the close partnership that we have developed with Masabi, helping to roll-out upgrades and improvements that continue to make everyday life easier for our new and existing customers. The scale of mobile ticketing adoption illustrates the power of this partnership and its benefits.**

The value of barcode validation with Transport for Wales

Since 2018, Masabi and its partners have worked with Transport for Wales (TfW) to provide on-board barcode scanning and an electronic ticket validation database (eTVD) service, facilitating both operator and interoperable scans. Since 2021, Masabi's partner has integrated its Inspect SDK into a new generation of handheld devices, carried on-board service teams, combining on-train retail and barcode ▶

© National Express

GARETH MARSH, *Digital Fraud Manager at Transport for Wales said:*

> **Masabi's experience in UK rail barcode ticketing is second to none. Working in partnership with them and their ecosystem, we have delivered a solution which reliably and efficiently enables mobile ticketing at scale across Welsh transport**

James Gooch

An accomplished marketing leader, **James** serves as the Head of Marketing at Masabi. In this role, he has helped grow the Fare Payments-as-a-Service company to serve over 200 agencies of all sizes across four continents. James is an expert in demand generation, branding, digital marketing, community building, thought leadership and content creation. He has a strong track record of success in building and managing high-performing teams and developing innovative campaigns that drive results.

scanning. With the exponential growth in barcode ticketing across UK train operating companies (TOCs) since COVID-19, the need for rugged and reliable handheld scanning devices has grown significantly. TfW is currently scanning over 800,000 barcodes monthly, with over 12 million scanned in 2023 alone.

Masabi's Barcode Validation Solution for UK rail has been a staple since 2007, facilitating secure and efficient ticket validation for TOCs across the UK rail network. Over the past year, the Inspect validation suite processed over 500 million scans and interoperable scans for UK rail. The solution includes Inspect, a versatile application for validating barcode tickets, and an software development kit (SDK) for integration into third-party apps and gatelines. Masabi's eTVD records all ticket scans and actions in compliance with Rail Delivery Group (RDG) standards, facilitating interoperability between providers. With continuous synchronisation, the eTVD ensures accurate ticket state management across the validation network, maintaining efficiency and security in UK rail ticketing.

FIND OUT MORE

To find out more about how Masabi can help you, please visit: *https://www.masabi.com/*

Ticket to ride: Innovating today to offer a seamless journey tomorrow

Leah Hockley, Editor of Intelligent Transport, discusses how far ticketing and payment technologies within the public transport and urban mobility industries have progressed since the beginning of the COVID-19 pandemic, and takes a moment to consider what may come next in this space.

Over the course of the last four years, the ways in which the transportation industry has innovated have been vast and complex. Most recently, technologies like artificial intelligence (AI) and automation have gained significant attention – both positive and negative – as the trend of ▶

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increased digitalisation continues. But we can't forget the other, now often overlooked, ways in which public transport and urban mobility has innovated out of necessity during one of the most difficult periods in the sector's history.
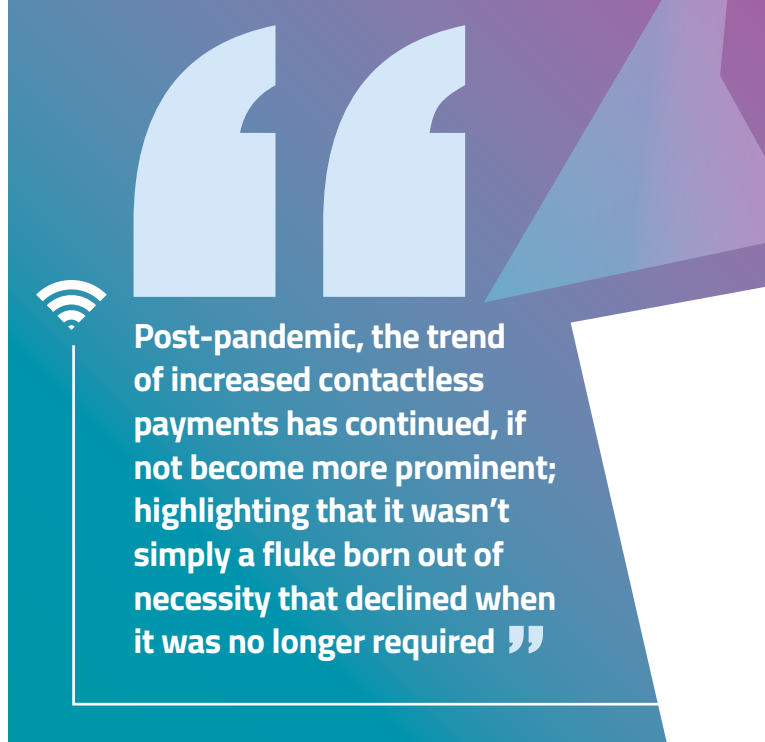
The impact of the pandemic

Prior to COVID-19, public transport journeys were vastly different – paper tickets and travelcards were the norm, though contactless and digital ticketing adoption were slowly on the rise; unless booking at a ticket office or purchasing from a driver, passengers had to work out which ticket they required themselves, adding a complicated and potentially stressful additional layer to travel; and the process of fare capping was far less mature than it is now, meaning that savings for passengers were minimal.

But then 2020 arrived, and our world was flipped upside down. What the industry considered to be 'the norm' was no longer suitable for the passengers that it served – and, if public transport wanted to survive, then it had no choice but to adapt and innovate in order to ensure its future. And so came the influx of new technologies and processes that better accommodated passenger needs and offered a safer journey during the height of the pandemic, and there can be no doubt that the widespread implementation of new ticketing and payment technologies was the most prominent of this influx.

Contactless on-the-go

During the pandemic, operators looked for a way to reduce touchpoints and unnecessary interactions with other people in order to improve health safety and limit the spread of coronavirus, and so contactless payments became the industry's saving grace. With no need for paper tickets or to speak to a ticket officer, passengers were free to travel as they needed to whilst still keeping a safe amount of distant from any potential health risks. And this wasn't exclusive to public transport, either: according to UK Finance's 2021 Payment Markets Report1, in 2020, whilst the total number of payments in the UK declined, falling by 11% to 35.6 billion, the number of contactless payments increased by 12% to 9.6 billion payments, meaning that contactless payments accounted for more than a quarter (27%) of all UK payments that year.

Post-pandemic, the trend of increased contactless payments has continued, if not become more prominent; highlighting that it wasn't simply a fluke born out of necessity that declined when it was no longer required. As passengers continue to expect and demand improved convenience and simplicity when travelling, the option to simply 'tap-and-go' continues to have significant appeal. According to Statista figures2, during the 2022/23 period, 65% of Transport for London (TfL) fare payments were made by contactless cards. In comparison, the share of payments made by Oyster card,

> **Post-pandemic, the trend of increased contactless payments has continued, if not become more prominent; highlighting that it wasn't simply a fluke born out of necessity that declined when it was no longer required**

which still accounted for over a third of fare payments in 2018/19, had dropped to 23%.

The impact of passenger behaviour on ticketing and payments

Whilst the COVID-19 pandemic changed our lives in a lot of ways, there are few that are set to remain permanent. But one of the longest-lasting impacts will undoubtedly be the expectation for things on-demand, and the requirement for the highest level of convenience possible, as mentioned above.

Throughout the course of having to remain isolated in our own homes, and then the continuation of working from home, consumers have become accustomed to services such as on-demand entertainment, ▶

constant connectivity and next-day delivery or same-day collection. According to a Nielsen insight from July 2021[3] based on e-commerce and omnichannel shopping, after more than 16 months of consumer dependence on connectivity and omnichannel experiences, the baseline for convenience was higher than ever.

This complacency has subsequently meant that people expect this kind of instant delivery in all aspects of life, and the public transport industry had no choice but to accommodate this demand if it wanted to ensure its future security. By making travel as easy and as seamless as possible, the passenger's need for convenience and an instant service is fulfilled – and this is where new ticketing and payments technologies, which offered faster

transactions and limit delay, played a vital role.

Glued to our mobile phones

A huge facilitator for the increased access to on-demand services and information are our mobile phones. 2023 figures from Statista[4] outline that the number of mobile devices operating worldwide is expected to reach 18.22 billion by 2025, signifying an increase of 4.2 billion devices compared to 2020 levels, meaning that more people than ever are benefitting from real-time connectivity, information, services and payments. Further to this, an article from Forbes[5] outlines that Americans check their phone an average of 344 times per day, which is approximately once every 5.5 minutes, highlighting that we really are,

figuratively, glued to our phones.

Because of our reliance on and attachment to our mobile devices, it is unsurprising that enabling the use of digital wallets across public transport systems has been warmly received by passengers. Figures from TfL[6] show that, in a four-week period from the end of July to late August 2022, around 485,000 journeys a day were being made on the London Underground (Tube) using a mobile device. Comparatively, prior to the pandemic (approximately the end of January 2020), there were around 400,000 contactless journeys a day being made using a mobile phone or smart watch. With the use of mobile devices expected to increase in the coming years, it is reasonable to assume that mobile ticketing and payments will increase, also. And this means that, for the sake of an optimum passenger experience, operators must continue to improve their offering in order to accommodate this continued trend. ▶

Leah Hockley

Leah is the Editor of Intelligent Transport. Having worked within the transportation industry for the past four years – with a focus on public transport, shared mobility, rail and aviation – she has developed a passion for innovation in transport. Benefitting from a global perspective through her role, she has worked with a wide range of industry leaders that are pioneers in their fields, leading the way in the progression of the transportation sector.

> **By making travel as easy and as seamless as possible, the passenger's need for convenience and an instant service is fulfilled – and this is where new ticketing and payments technologies, which offered faster transactions and limit delay, played a vital role.**

The future of ticketing

To some, it may feel as though there isn't much more to come for the ticketing and payments space within public transport and urban mobility. And, whilst it may currently seem that there isn't much progress to be made, as the vast majority of operators have already implemented what is now considered to be the 'standard', it would be naïve to believe that this is where ticketing innovation ends.

For example, one prominent trend in the payments space globally and across multiple industries that is currently gaining momentum is the option to Buy Now, Pay Later (BNPL). Whilst the merits and pitfalls of BNPL can be debated significantly, there is a clear appeal for many consumers: according to a Juniper Research study7, the BNPL userbase will increase by 107% by 2028, from 380 million users in 2024. Given this trend, who's to say that public transport won't consider introducing a BNPL offering for its passengers, adding an additional layer of convenience for those looking to spread the cost of travel.

Going a step further into the future, why would it not be a feasible idea for biometrics to become a key player in the ticketing and payments space? According to Statista8, the market for biometric authentication as a form of identification and access control has been growing in recent years and, in 2023, the digital identity solutions market – of which biometric technology is a major component – was valued at $34.5 billion and is forecast to continue its increase in the coming years. With this anticipated growth, it isn't unreasonable to consider that the future may see bank cards become obsolete, and everything instead become attached to our biometric identity, resulting in a public transport industry that no longer requires physical payment but instead utilises biometrics to debit a passenger's bank account.

Whilst these ideas may seem unlikely, the point to be made is that, whilst we don't truly know what will come next for ticketing and payments, COVID-19 has taught us that we can't be limited by our current expectations or predictions, and that we must be open to change and unexpected innovation. The industry has progressed significantly over the course of the last four years, but that doesn't mean that it should become idle in its efforts to innovate in order to offer the best possible passenger experience that meets the expectations and demands of those choosing to travel. After all, it is only by doing so that operators can encourage more people on-board. 📶

Contactless Payments

Discover® Global Network, the global payments brand of Discover Financial Services, processes millions of cardholder transactions each day. Discover Global Network is the fastest growing global payment network, with 29 payment alliance networks worldwide and 345 million cardholders spending more than $589 billion annually.

With industry expertise and innovative technology, Discover Global Network provides payment capabilities such as Discover Transit Solutions that allows riders the flexibility to pay their way. Accepting payments from Discover Global Network cards not only connects transit agencies to more consumers, but it also provides the opportunity to improve passenger experience, lower operating costs and reduce fraud liability risk by leveraging the network's licensed technology.

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Transforming customer journeys: Enabling seamless travel with the latest ticketing & payment technology integration

Join this exclusive webinar, brought to you by *Intelligent Transport*, to gain insight into the cutting-edge innovations in ticketing and payment technology that are reshaping the transportation landscape.

Supported by: Pcentra

By adopting the latest transport ticketing and payment technology, operators are able to streamline transactions and offer a more seamless journey to passengers. Crucial for efficiency, reducing queues and enhancing user experience, it modernises and simplifies public transportation systems and removes the pressure of requiring intimate knowledge of the network off of passengers. But what are the challenges of implementing these new technologies, as well as having to keep up-to-date with what's new? How do operators know which system will work the best for them and their passengers? And, above all, what is being done to support passengers who are not as technically savvy or are unbanked?

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During this session, join our industry experts as they explore the cutting-edge innovations in ticketing and payment technology that are reshaping the transportation landscape. From contactless solutions to mobile wallets, join us to discover insights into the future of frictionless and secure transactions in the realm of modern mobility.

Key learnings:

- What are the unique benefits of different ticketing and payment technologies?
- What are the challenges in adoption, and how can these be tackled?
- How can operators identify which of the new ticketing and payments options would work best for not only the company, but also for its passengers?

- Why is it important that the approach to ticketing and payment technology adoption is passenger-centric?

Participants:

- *Moderator:* Ralph Gambetta, Chairman of the Smart Ticketing Alliance
- *Speaker:* Katherine Conrad, Executive Director at NEORide
- *Speaker:* Kamelia Jones, Senior Retail Systems & Digital Manager at Greater Anglia
- *Speaker:* Moshe Kahane, Business Development Manager, Pcentra

Register to attend for free *here* to avoid missing out on the latest ticketing and payments insights. 📶

A collaborative approach
for the future of cEMV

Alex Sbardella, Commercial and Product Director at Unicard, discusses how cEMV payment technology offers the solution to fragmented legacy ticketing infrastructure, and how gaps in regulatory standards and best practices hinder the implementation of interoperable cEMV solutions.

Unicard

When asked, most passengers would say that their preferred choice when paying for public transport is contactless EMV – they can simply tap their bank card and ride, without any need to prepay or set up an app. For example, in 2023, 65% of TfL's journeys were made using cEMV, with around a third of these using Apple Pay or Google Pay. cEMV payments represent an incredible opportunity for streamlining ticketing, whilst safeguarding against fraud and presenting an opportunity to use real insights from the data collected. The convenience of tap-and-go payments is clearly the path to getting more people embracing public transport – ultimately leading to increased revenue for operators, and fewer cars on the road.

As urban transport becomes increasingly integrated and multimodal, transport operators and regional authorities should be encouraged to use cEMV to overcome fragmented legacy ticketing infrastructures and meet changing passenger demands. In doing so, travel becomes more convenient, personalised and efficient, whilst offering transit operators the opportunity to increase revenue.

But, whilst we are on the cusp of a once-in-a-decade opportunity to introduce the systems that deliver better passenger and operator outcomes, the UK currently lacks the standards and best practices needed for interoperable cEMV. This has already resulted in self-serving practices by suppliers attempting to capitalise on current opportunities without consideration for passengers or industry cooperation across providers.

Through collaboration in procurement and standards – as the Rail Delivery Group (RDG) has done through their consultation for the ▶
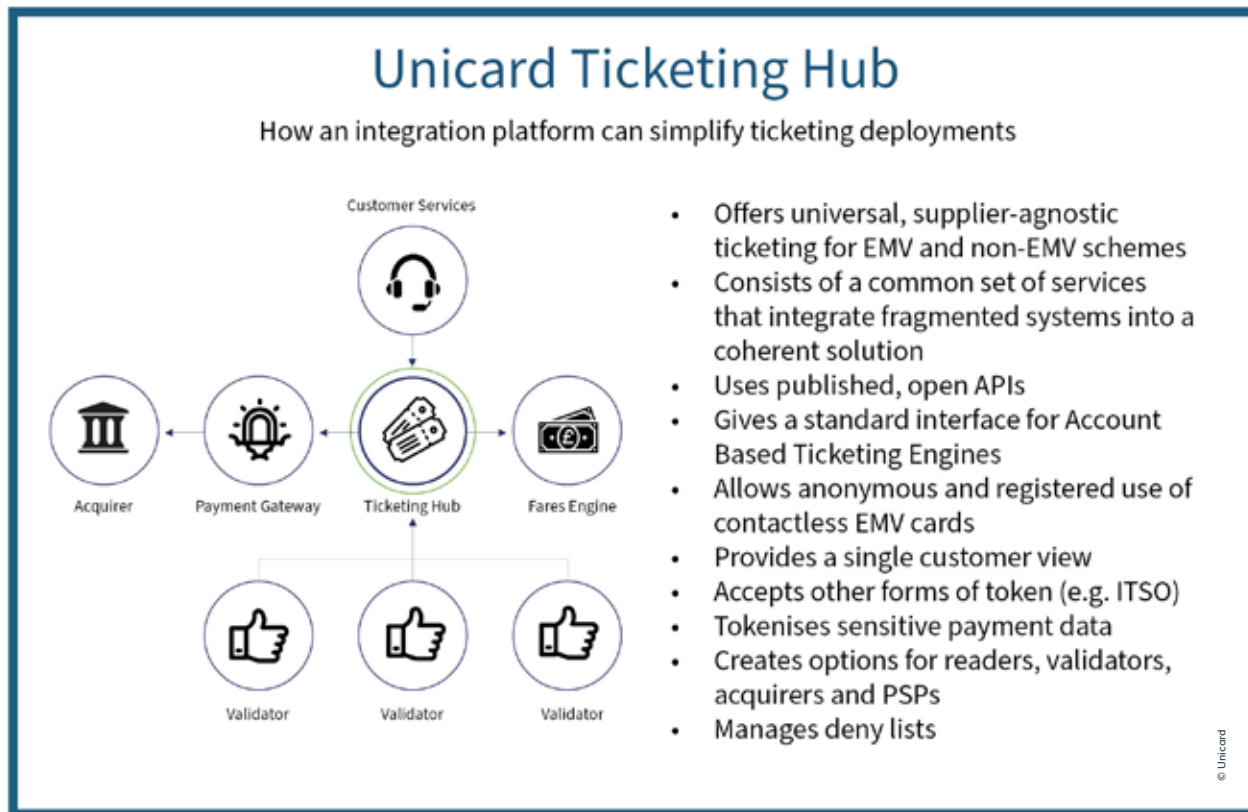
Tap Converter Service to support regional and national implementations of Pay-As-You-Go for rail – cEMV becomes both more cost-effective and more user-friendly and inclusive, catering to a diverse range of passenger needs. Both vendors and procuring bodies should be seeking a situation where suppliers are free to develop their own solutions and standards, but do so in co-operation with the wider industry, where, ideally, an independent body oversees the very best interests of everyone involved.

Of course, Project Coral is currently aiming to deliver a single cEMV back office for multi-operator travel for the whole of the UK. However, trials to date have been very limited in scope, lack broad vendor engagement and it will doubtless take a very long time to deliver. Passengers deserve cEMV now and should be able to travel without the complexity of current ticketing systems and fare structures. ▶

> **Collaboratively scaling cEMV operations allows us to better serve the changing customer expectations of convenience, ease of use and flexibility**

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Unicard Ticketing Hub

How an integration platform can simplify ticketing deployments

Customer Services

Acquirer — Payment Gateway — Ticketing Hub — Fares Engine

Validator   Validator   Validator

- Offers universal, supplier-agnostic ticketing for EMV and non-EMV schemes
- Consists of a common set of services that integrate fragmented systems into a coherent solution
- Uses published, open APIs
- Gives a standard interface for Account Based Ticketing Engines
- Allows anonymous and registered use of contactless EMV cards
- Provides a single customer view
- Accepts other forms of token (e.g. ITSO)
- Tokenises sensitive payment data
- Creates options for readers, validators, acquirers and PSPs
- Manages deny lists

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> "cEMV payments represent an incredible opportunity for streamlining ticketing, whilst safeguarding against fraud and presenting an opportunity to use real insights from the data collected"

Plus, Coral is not necessarily designed with local needs in mind, and a large number of schemes want to deliver something more quickly and more in tune with their local requirements than the expected Coral solution will allow them to do. We run the risk of ending up with a de-facto monopoly on cEMV transactions – benefiting that provider financially, but not necessarily delivering a better transport network nationally.

This runs contrary to Unicard's long experience working with ITSO, where a shared open standard and cooperation between suppliers led to increased interoperability, the delivery of new services such as Mobility-as-a-Service (MaaS), and a vibrant market amongst competitors working together.

Franchising also has the potential to have a major impact on the public transport industry and may even remove the need for some multi-operator solutions, but this will take time to implement, and will not be evenly or quickly distributed throughout the UK.

The proposed introduction of a large centralised multi-operator solution relying overwhelmingly on a transaction-based model risks eliminating the business case for cEMV; with every part of the solution maximising their slice of a restricted fare take, and single operator travel paying a 'tax' for multi-operator infrastructure that it gets no value from.

Collaboratively scaling cEMV operations allows us to better serve the changing customer expectations of convenience, ease of use and flexibility, plus more focus on supporting services like multi-modal trip planning, live timetabling, location information and disruption reporting and alerting.

With Unicard's Ticketing Hub and product – currently live with Transport for Wales – we believe in delivering a modular solution where operators can choose from different suppliers for:

- Payment processing
- Tokenisation
- Acquiring
- Hardware vendors
- Fares engines.

Scheme operators should be enabled to choose the best solution for their requirements, rather than being locked into vendors that are only able to provide a 'one-size-fits-all' solution.

We also believe that it should not matter what the customer uses to tap in or out, so we support a token-agnostic view of Account Based Ticketing (ABT), where the system is able to calculate a fare and charge it to the customer irrespective of whether they are travelling with cEMV, ITSO or barcode.

Data within the system must be owned by the scheme's operator and the transport authority, ▶

and it should be free to access and use that data insight. The operator should oversee imports and exports, and should control who has access to that data and functionality; that should not be something that the technology provider holds on to and mandates the use of. However, many businesses make their money from being in charge of data and, once again, it comes back to their ability to lock systems down and keep them proprietary.

Another type of monopoly exists when it comes to hardware estates in transport, where operators find themselves with hundreds of gates or readers from a single supplier which they are then unable to easily change, restricting the operator's choices when it comes to pricing and bringing in new technology.

However, with Ticketing Hub, we have been able to introduce mixed hardware estates. We provide the ability to keep your existing gates from provider A but also add new gates from provider B which can work alongside the existing gates. Mixed hardware estates mean better pricing and promotes more collaboration and innovation; plus, there is the option to take an incremental approach to delivery rather than trying to replace hundreds of gates in one go.

With Ticketing Hub, we are committed to:
- Interoperability
- Decentralisation
- Open standards
- Data sharing
- Better ownership models.

Our commitment to these principles is evident in what we've delivered for TfW:
- By acting as a neutral third-party in deployments, Unicard does not favour one supplier over another – our APIs can be published and open, allowing for wider industry support and better integration in multi-supplier environments
- Aggregating payment transactions wherever possible, so we minimise acquirer fees for operators
- Open, published APIs allow us to integrate quickly and easily with validators, fares engines and customer support systems
- A multi-acquirer solution, directing payment requests as appropriate
- Multiple validator suppliers, operators and modes in a single transit deployment.

Without choice, we cannot encourage competition between suppliers, and monopolies ultimately harm customers. Transport authorities, technology vendors and the wider ecosystems have an incredible opportunity to drive far more integrated customer experiences. They should, at all costs, avoid being locked into specific providers, as it reduces their ability to innovate, and also the

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incentive to do so. The advent of open-loop systems has redefined how passengers want to travel, and we should be committed to delivering against these expectations in order to keep the UK at the forefront of delivering multimodal public transport.

For these reasons, we believe that Unicard's Ticketing Hub is currently the best solution for delivering cEMV ticketing right now. The market and the public deserve a contemporary solution, and we challenge the industry, and important stakeholders such as the Department for Transport (DfT), to commit immediately to these same principles, and deliver now for the future of ticketing. 📶

TO LEARN MORE

To find out more about how Unicard can help you, please visit: *unicard-uk.com*

Lessons learnt from Luxembourg's fare-free **transport system**

THE GOVERNMENT
OF THE GRAND DUCHY OF LUXEMBOURG
Ministry of Mobility and Public Works

For *Intelligent Transport*, Luxembourg's Ministry of Mobility and Public Works provides invaluable insight into ground-breaking fare-free initiatives and cutting-edge innovations being utilised across the country, offering a glimpse into the transformative potential of public transportation and its evolving landscape.

How has the implementation of fare-free public transport in Luxembourg since 2020 impacted the overall patronage of buses, trains and trams?

The introduction of fare-free public transport in Luxembourg on the overall patronage of buses, trains and trams is not measurable. We do not have details since no significant modal shift was expected in the short-term: evidence shows that the determining factor when people chose a mode of transport is its perceived quality (comfort, reliability, total travel time, total cost, etc.). Nationally and internationally, sudden modal shifts are only observed at a time of significant changes to the transport offer, either because a new, attractive offer was added or an existing, widely used offer became unavailable.

On 1 March 2020 – the day public transport became fare-free in Luxembourg – there were no such changes, including pricing: in Luxembourg, riding public transport was always significantly cheaper than driving a car, even when public transport was still a paid service (€50 per month or €4 per day for the entire country). Thus, there were no precipitating factors for a sudden shift towards public transport. However, in the long-term, the elimination of ticketing is expected to encourage spontaneous usage, ▶

To encourage the use of public transport, it is vitally important to invest in a high-quality multimodal offer that meets the daily mobility needs of the population, as identified by large-scale representative surveys.

and thus accelerate people discovering the strong public transport offer in Luxembourg.

Can you elaborate on the unique challenges and innovations associated with managing fare-free public transport, especially concerning ticketing and payment systems?

The main goal persists in offering an efficient, high-quality public transportation system while consistently enhancing multimodal options for the convenience of the public. Users value the spontaneity of being able to hop on any bus, tram or train without having to buy a ticket. Additionally, there has been a re-organisation regarding the responsibilities of the staff. The roles of train attendants and conductors have been adjusted and expanded to prioritise order and safety on trains, trams and buses in order to guarantee better service and flow of information.

How has the fare-free public transport policy influenced the accessibility and usage patterns in both urban and rural areas of Luxembourg?

Drawing conclusions on this matter poses a challenge, as it remains unmeasurable due to factors like pandemic disruptions, telecommuting and ongoing improvements in public transport offerings.

The exception to the fare-free policy for first class tickets and subscriptions is noted. Can you provide insights into the decision-making process behind this exception and its impact on the overall sustainability and funding of the fare-free public transport initiative?

The decision was made to retain first class accommodations on trains to maintain the

desired service standard for the majority of first class passengers. First class is considered a privilege, and it was determined not to receive further subsidies. Subsidies exceeded 90% even before the introduction of fare-free public transport. The budgetary implications were ▶

Ministry of Mobility and Public Works

The Ministry of Mobility and Public Works in Luxembourg is responsible for overseeing various aspects related to transportation, infrastructure and public works within the country. This includes managing road networks, public transportation systems, urban development projects and ensuring the safety and efficiency of transportation infrastructure. In addition, the ministry plays a crucial role in implementing policies and initiatives aimed at promoting sustainable mobility and enhancing the overall quality of transportation services for residents and visitors alike.

> "Passenger trains have been running on 100% renewable energy for decades, so do trams. Regional buses are on track to become fully electric by 2030. In terms of mobility applications, mobiliteit.lu is an app which shows real-time information. . The Mobility Observatory, which has been presented in June 2023, has the purpose to collect, process and disseminate mobility data to enhance understanding of mobility behaviour in Luxembourg"

neither more nor less sustainable than those of a 10% subsidy increase in any other country.

Luxembourg's cross-border connections are highlighted, with access to German, French and Belgian networks. How has the fare-free public transport policy affected international collaborations and partnerships in the realm of public transportation?

Fares for cross-border tickets were reduced to take account of the free leg on the Luxembourg side. Other than that, fare-free public transport has not affected the close international collaboration that Luxembourg seeks with regards to public transport.

Given Luxembourg's successful implementation of fare-free public transport, what advice or key lessons learned would you offer to other countries considering the adoption of similar policies to enhance public transportation accessibility and sustainability, and what lessons can other countries learn

from Luxembourg's experience in this regard?

In fact, several cities of medium to large size have shown keen interest in adopting similar policies.

Clarity and simplicity are key when it comes to the tariff structure. It should be affordable not just for passengers, but also for operators who

rely on ticket revenue or subsidies to uphold a high standard service. The ultimate goal is to make using public transport just as convenient as jumping into your own car: simply walk to the nearest transportation option, get on and effortlessly arrive at your destination. ▶

> **Users value the spontaneity of being able to hop on any bus, tram or train without having to buy a ticket** 〞

In the long-term, the elimination of ticketing is expected to encourage spontaneous usage, and thus accelerate people discovering the strong public transport offer in Luxembourg.

> **To encourage the use of public transport, it is vitally important to invest in a high-quality multimodal offer that meets the daily mobility needs of the population** 〞

Having an attractive tariff structure is not sufficient. To encourage the use of public transport, it is vitally important to invest in a high-quality multimodal offer that meets the daily mobility needs of the population, as identified by large-scale representative surveys. Additionally, the publication of a credible long-term strategy to enhance public transportation quality is crucial. This provides users with the assurance that current shortcomings could be addressed and improved over time.

As public transport continues to evolve globally, are there plans to integrate emerging technologies or innovations into Luxembourg's fare-free system, such as smart mobility solutions, digital platforms, or alternative energy sources, to further optimise the public transportation experience?

Passenger trains have been running on 100% renewable energy for decades, so do trams. Regional buses are on track to become fully electric by 2030. In terms of mobility applications, mobiliteit.lu is an app which shows real-time information. The Mobility Observatory, which has been presented in June 2023, has the purpose to collect, process and disseminate mobility data to enhance understanding of mobility behaviour in Luxembourg.

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