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SMART TICKETING INSIGHTS

VISA

Fresh thinking on the smart ticketing & mobility payments landscape.

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Contents

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The future of urban mobility: How do digital payments take a new route forward?

In urban mobility, payment innovation is picking up speed, transforming traditional business models and accelerating a new era of growth. The rise of digital payments isn't just about streamlining transactions, it's about enabling transit operators to optimise revenue, fight fraud, and encourage transit use with a wealth of data insights.

This article explores a few areas where urban mobility payment and technology leaders can build an effective payment strategy for the future—whether you're looking to scale confidently, keep pace with innovation, or create new opportunities.

1 Understand how digital payments can improve passenger experiences

The first significant impact of digital payments is the impact they're having on customer experiences. They are making travel more convenient, personalised, and efficient for everyone. From contactless transactions to advanced eCommerce capabilities, and from tap-to-phone technology to tokenisation, digital payments are enhancing the customer experience across multiple touchpoints.

The advent of open-loop systems has redefined how passengers pay for their rides. These systems enable riders to simply tap and go using their contactless EMV® debit or credit cards or even their smartphones. This not only reduces wait times but also significantly benefits visitors and occasional riders, who can travel without the hassle of understanding complex ticketing systems and local fare structures.

And further to this, introducing advanced eCommerce and in-app capabilities allows transit operators to broaden their closed-loop systems. This expansion includes a variety of top-up methods and even account-based ticketing, offering riders a multitude of digital payment options. These options range from app-based tickets using different fare media, like QR codes, to the provision of subscription services through recurring billing, with unified passenger journey views supported by account-based architecture.

Ken Ritchie

Senior Director - Head of Solutions Management and Delivery - Urban Mobility

VISA

Kenneth Ritchie is a seasoned leader with more than 27 years of experience in working with partners in complex environments and more than 12 years of experience in payments. He currently holds the position of Senior Director, Head of Solutions Management and Delivery for Urban Mobility at Visa Inc.

He is known for his expertise in solution design and driving change, with deep knowledge in payments, urban mobility, mass transit, parking, EV charging, travel, airlines, government solutions, and chat payments. He has implemented Discover, AMEX, and ITMX card schemes for transit onto the Visa Acceptance Platform and designed and delivered into production a key innovation in tokenisation for transit. His team has delivered more that 110 Mass Transit projects globally, with 60 projects delivered last year alone.

Ken is a forward-thinking leader who continually engages with the mission and objectives of the organizations he working with to drive projects forward. His focus is on delivering digital payment solutions that drive sustainability, lower costs for merchants, and delight cardholders.

Such services offer riders the advantage of cost-effective travel without needing to pay a large sum up front to buy monthly or annual tickets.

Cutting-edge tap-to-phone technology is another leap forward to modernise experiences by turning mobile devices into payment terminals. It also enables workers to serve passengers quickly and efficiently at the station or during transport. In this respect, on-the-go payment processing can be deployed in conjunction with traditional ticketing systems to enhance efficiency and reduce wait times for passengers. On top of that, contactless payments can help alleviate waiting at ticket machines and offices, so staff can be mobilised to focus on passenger support.

2 Consider how digital payments can fast-track your revenue

Digital payments are not just enhancing customer experiences, they are also opening new avenues for transit operators to increase their revenue. The introduction of flexible payment options facilitated by account-based architecture, such as 'Buy Now, Pay Later' and in-app payments, can be a key to future growth. By catering to a diverse range of passenger needs, these options are making transit systems more accessible to wider demographics and thereby help to capture more potential sales and robust revenue streams.

Tokenisation technology is a game-changer, enabling operators to recognise passengers across different journeys and gain better understanding of their travel patterns. This paves the way for loyalty programmes and rewards in urban mobility, letting operators offer incentives that strengthen riders' loyalty. One potential strategy could involve operators working with local businesses to reward exclusive discounts to ticket holders, which would not only boost passenger loyalty but also drive repeat business, creating a win-win situation.

Digital payments and advanced technologies such as AI and machine learning are transforming this landscape too. When deployed effectively, these technologies can help ensure you capture legitimate transactions while minimising unwarranted rejections. Combining this with customisable rule engines, real-time behavior analysis, and account takeover protection can help you increase acceptance rates, lower manual reviews, and boost bottom lines.

The shift to digital payments also leads to cost efficiencies. Innovations like virtual cards reduce expenses associated with producing and distributing physical cards, while tokenisation can recognise passengers entitled to a specific fare class. This shift to digital payments also helps to reduce the resources spent on managing cash and tickets, ensuring accurate fare payment and minimising refund claims due to pricing errors.

3 Grow and innovate with a robust ecosystem of partners

The third key advantage of digital payments lies in their capacity to expand and scale operations across urban mobility.

Implementing a robust, reliable payment solution that can handle a surge of contactless and digital transactions is key. With a single connection to an open payments platform, transit operators and technology leaders can access modular services like payment processing, digital/in-person accept, tokenisation, fraud management, and more—all in one place. This lets you be prepared as you scale, with the capabilities to accept the payment methods of tomorrow.

Collaboration with payment partners proficient in fraud management and PCI DSS compliance can help facilitate the deployment of next-generation urban mobility payments. As operators extend services to new routes or regions, digital payments help scale operations to serve more passengers. Even for those planning their MaaS vision, digital payments can foster partnerships with other transit operators or service providers for integrated ticketing across different types of transport.

Are you ready to create simple, secure and flexible payment experiences for passengers? We can help you build an effective payment strategy – and, together, pave the way for the smart and connected cities of the future.

So, what's next?

Let's shape the future of urban mobility. Our industry experts can help you optimise your payment acceptance strategy as part of your digital transformation and growth.

Get in touch

VISA

Innovate public transport with ABT making it more attractive to users and investors

Advances in digital technologies are set to replace our current vehicle-centric mobility system with a radically more efficient and data-enabled transport ecosystem with consumers at heart. Historically, the public transport industry has operated along largely linear value chains, now various sectors are converging, eager to seize revenue opportunities in a new mobility ecosystem. Digital Mobility is a transformational digital business archetype of transit business creating new demands, making it more efficient and enabling new business models attractive for its users and investors.

What is innovation?

Innovation means different things to different people and organisations. Therefore, it's very important to define innovation before it becomes an overused term. In very simple terms, innovation can be defined as "successful commercialisation of an idea" for a commercial entity or "successful implementation of an idea" for a non-profit entity. So, an idea remains just an idea until it's either commercialised or implemented for creating some value. Mobility innovations are fundamental to our environmentally sustainable future as well as for moving economic activities for sustainable future growth.

What's the big deal about Account Based Ticketing?

The customer or user is always central to the success of any product/ service irrespective of any industry. And the design of the service begins with Knowing Your Customer (KYC). As opposed to other industries such as financial service, telecom, media, e-commerce etc. public transport industry primarily relies on anonymous and non-real time data to understand the customer needs, behaviors, travel pattern, demographics, etc. which leaves out opportunities for innovation in the current digital era.

Dr Dheeraj Bhardwaj

Group CEO

As a Group CEO for City Group Co., Kuwait, Dheeraj is leading the transformation agenda of passenger transport/ mobility industry in Kuwait with the focus on digital innovations and green initiatives. Prior to this he was co-founder and CEO of Arnab Mobility a micro-mobility start-up in UAE.

He played a major role in the development of India's Supercomputer PARAM and mission critical applications, instrumental in transforming Construction Industry in the UK and Middle East, developed Innovation Strategy for $25 bn Crossrail project in London and award winning "Dubai Innovation Index".

Recently he led the launch of "Citylink Shuttle" First Shuttle service in Kuwait that is a globally benchmarked and unique digital mobility service based on Demand Responsive Transport (DRT) concept that is targeted to reduce traffic congestion in busy urban areas.

Account Based Ticket (ABT) fundamentally is an enabler of the following:

1. Digitalisation of public transport
2. Know Your Customer
3. Innovation opportunities
4. AI future of public transport

Digitalisation of public transport

Digital and data can somewhat be described as a 'chicken and egg' problem. Digitalisation is changing the way we and organisations must achieve change, on virtually every front. Today, it's become second nature to many people to order food, movies, music, groceries etc. on-demand via an app on our mobile phone. People also just want fast, uncomplicated transport service booked through an app on their mobile phone when they need it.

> *"If public transport doesn't embrace Digital to change the way we plan, operate and manage, somebody else will and it will be their lunch - in a way or another."*

ABT is about digitalisation of the ticketing system and integrating the full-service cycle from planning, scheduling through to dispatching, fleet management, ticketing, validation, inspection, and accounting/reporting. Therefore, digitalisation of full-service delivery process is a pre-requisite for the ABT implementation. The data generated by each step of the service delivery process not only allow operational insights in real time but also deep analytics to enhance efficiencies, safety, environmental sustainability, and passenger experience.

Data generated through digital service delivery along with the customer experience process makes public transport system future proof and enables the use of technologies such as AI that solely rely on industry specific data.

Know your customers

Knowing your customers is one of the most powerful tools to customise, personalise and optimise a service/product offering in any industry sector. In public transport, by definition, ABT is about creating accounts by customer on the digital platform.

While the customer's personal identity remains confidential, the usage data from public transport service becomes an asset. This data can be used as a tool to know the customer needs by analysing travel patterns, spend and behaviours, which can then be turned into customised and personalised offers and alerts, enhancing customer experience. This can also be used to enhance safety as well understanding the public transport demand in space and time making public transport more efficient.

Innovative opportunities

ABT creates digital innovation opportunities for public transport by unlocking new business models for both transit and non-transit services. The mobile app, APIs and the data generated by ABT system is critical to enable business models such as Mobility-as-a-Service (MaaS). New mobility mode that we all need every day- a *Mobile App* that integrates, and provides access to, different transport modes, such as mass transit, ridesharing/hailing, car-sharing, bike/scooter-sharing, taxi, car-rental etc. allowing us to plan, book, pay and ride all in one app for a complete journey from point A to B.

An Account Based Ticketing (ABT) system offers mobile payment options and provides seamless integration with other transit services as well as non-transit revenue opportunities such as micro-payments, money exchange, non-transit ticketing etc.

Super App is a natural progression for a public transport mobile app enabled by ABT. Digital payments sit at the heart of most super-app services, it is evident that they can emerge from within or outside the financial services industry. Since getting from A to B is a daily need for all humans, travel and mobility mobile apps have the potential to become the next Super App.

Mobility apps have a large and highly engaged user base that can be leveraged to make the app a gateway for countless other services. Mobility Apps first solve a core need for users, which drives mass adoption and engagement. In the case of Mobility App, given payments and travel are needed very frequently, users return to the app constantly. Due to this high engagement, it becomes easy to bundle other everyday services and apps that might also require payment, information, or social interaction.

For instance, mobility app users can now buy bus tickets, pay for utilities or fines, review a restaurant, book a doctor's appointment and much more. All this without ever leaving the same app. Super Apps can create a lot of value by helping users avoid signing up and inputting payment data in various apps multiple times. There are clear synergies in combining certain services for consumers – integrate and conquer.

AI future of public transport

The recent developments and global adoption of artificial intelligence (AI) is rapidly changing the way we live and work, with technology playing a growing role in industries including public transport. Future of AI in public transportation is expected to be revolutionary. As AI technology continues to progress, its applications in public transportation will only increase, paving the way for even greater efficiency, safety, and accessibility.

Advanced data technologies like AI run on the cloud and depend on global data sets and barriers of data flow limits local businesses, researchers, and developers from access to these tools. Foundation model, computers and data are the three core pillars of Generative AI and you cannot talk about Generative AI without data. Therefore, digitalisation of public transport systems and the data generated from operations and customers are fundamental to build "Foundation models" and develop "Large Language Models (LLMs)" to build the AI future of public transport.

Fully integrated with AVL, Planning & Scheduling, OCC, security & ERP Systems
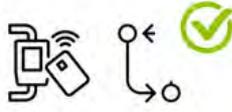
Account-based and open loop ticketing with support for various fare media, eg, QR code, mobile app, smart cards and EMV

Support for integration with existing/future third party systems

Mobile App for payment and journey planning

Supports micropayment and, digital tickets

Ticket sales through agents/merchants

2024 and beyond: The world of transit ticketing is changing in the new world of "mobility"

The Customer convenience and transit agency benefits brought by closed loop and cEMV PAYG ticketing solutions can be dramatically enhanced by taking advantage of proprietary mobile wallets such as Apple and Google and third party Super Apps enabled through card virtualisation.

As we move into 2024, there are major changes taking place in the way people want to travel. This is driven by a number of factors, notably Net zero initiatives and world-wide post pandemic changes to work and leisure patterns.

Ridership of most major public transport networks has returned to a high percentage of the volumes in late 2019, but commuters in many parts of the world do not travel as often as they did reducing the demand for traditional season tickets and period passes.

Leisure travel has widely risen post Covid with weekend travel on Transport for London (TfL) in the UK now as high as during the working week. This major shift to less regular and structured travel impacts transit agency revenues and all aspects of operations including ticketing and fare structures, timetabling, vehicle utilisation, maintenance and staffing.

Customer expectations are also changing. Riders want convenience, ease of use and flexibility. They expect to be able to turn up and travel, without having to pre-purchase a ticket, or buy and top up a travel smartcard (issued by the transit agency and often called a "closed loop card").

Transit users see simple and easy to use Pay as you Go (PAYG) ride-share, personal mobility and food delivery services from companies such as Uber, Lyft, Via, Grab and Didi and want the same type of customer experiences for public transport.

Customers also expect pre and during live travel information and updates to be available 24/7, online, on their mobile devices and in their own language. This includes multi-modal trip planning, live timetabling, location information, disruption reporting and alert messaging.

Tim Jefferson
Senior Consultant

FirstPartner

Tim leads the Transit Ticketing practice at FirstPartner, a payments focused consulting and research company. FirstPartner supports transit operators, technology and payment providers and payment schemes with the design and implementation of digital ticketing programmes using cEMV, closed loop and mobile.

Tim is a 40+ years consulting veteran of the mobile phone, IT and transit industries. He has a deep understanding of transit ticketing on bus, metro, light and heavy rail from automatic fare collection (AFC) to Account Based Ticketing (ABT) systems to current Software as a Service (SaaS) based mobility solutions. His work covers Mobility as a Service (MaaS), Demand Responsive Transport (DRT) and wider mobility solutions including EV charging and shared ownership models.

He currently leads a team of industry experts at FirstPartner, providing transit and payments expertise in the UK, Europe, MENA and North America driving the uptake of customer and mobile centric next-gen ticketing solutions.

The challenge for transit agencies is to deliver ticketing and information services to a wide range of customer segments to meet these increasingly demanding customer expectations. Gone are the days when transit agencies just provided static timetabling information to download from their websites!

Mobile is both the now and also the future!

Now

Mobile is already the now, as customers expect to be able to get travel information and also to use their mobile wallet to pay for cEMV PAYG travel. Users get that travel information from the transit agency's own mobile app, a mobile version of the agency's website, a third-party travel app or Google or Apple map apps already.

Users are also already using their phones to top up transit agency closed loop cards. This can work for either a linked physical smartcard or a virtualised version in their mobile wallet of choice. Due to the increased convenience, vendors and the wallet providers have been progressively developing and deploying these virtualised card solutions for the last couple of years. Examples of solutions delivered via Apple and Google Wallets include:

- China, - Agency issued cards in Beijing and Shanghai and also the country wide China T-Union travel card providing national travel in 275 cities in China
- Hong Kong – Octopus card which is widely used for travel and wider low value purchases
- Japan - Users can virtualise Suica, PASMO and ICOCA cards to use throughout the country
- US – Riders in Chicago can add their Ventra card; in Los Angeles, a TAP card; in Portland, Hop Fastpass; the San Francisco Bay Area, Clipper card; and in Washington DC, SmarTrip card.

The user experience is slick with riders either adding a new card direct to the wallet or just adding their existing agency card to their wallets. Users top up via either the transit agency's own app, via their open loop payment cards in their wallets or via direct bank payments.

Many large transit agencies, especially in the North American market are looking not to issue pre-paid closed loop physical cards when they change back-office systems, at least to start with, as they see mobile as the way forward and want to drive mobile acceptance and reduce their costs. They will if required issue cards, for certain segments of their customer base, but this will be quite low in absolute numbers. Agencies also are looking to make sure they meet their legal US Government "Title VI" requirements for Federal funded transit agencies, by providing un and underbanked with commercial off the shelf pre-paid apps/cards such as "Cash App" or Apple Cash in the US , rather than agency issued media.
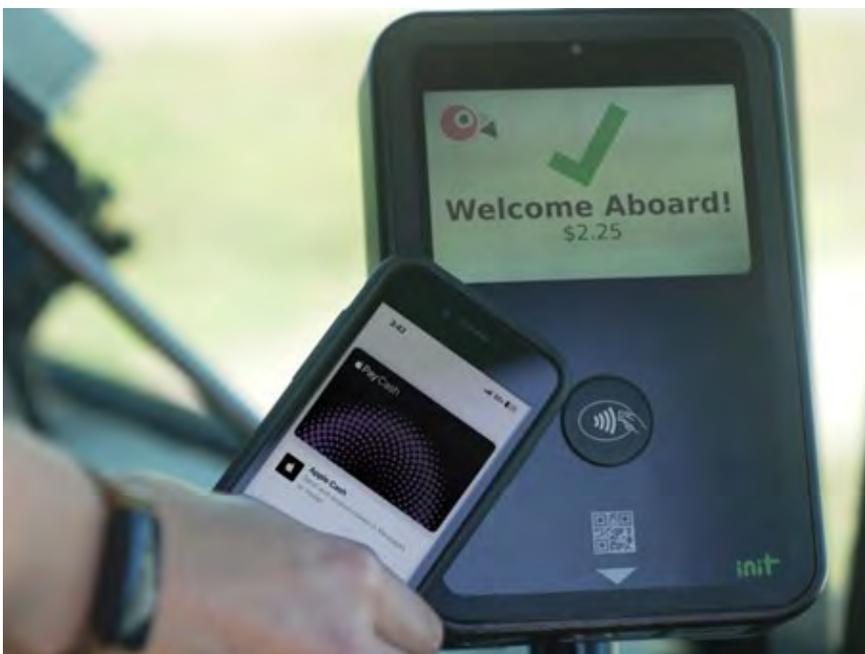
Credit: INIT

In addition to these virtualised transit agency issued cards, cEMV contactless PAYG transit ticketing solutions allow riders to use virtualised standard bank issued payment cards loaded in their Apple Pay, Google Pay, Samsung Pay, Huawei Pay wallets, for cEMV PAYG and then in the WeChat Pay and AliPay QR based wallets/apps for use in China and SE Asia. This is already business as usual for most transit agencies, either with 750 existing or planned implementations, claimed by Visa.

Key to driving further use of cEMV PAYG is the added value brought by the OEM wallets. A good example is the implementation in the UK in Brighton with Google Wallet. Brighton & Hove Buses users can view their journeys, spending history, and savings and check their progress towards daily or weekly fare caps directly in their Google Wallet.

The transit agency Go-Ahead Group see this as a customer experience enhancement. "Most of our passengers are already using digital or contactless payment methods, so it makes sense for us to trial new ways in which we can further enhance the customer's journey. With 60 million passengers on our buses a year, the customer experience is a top priority," Brighton & Hove Buses's - Commercial Director Nick Hill.

This increased functionality within the wallets is driving enhanced customer experience, meeting the increased customer expectations and also reducing costs and complexity for the transit agencies, who have to do less themselves with their mobile apps and websites. A "win-win" for agencies, but also a major win for customers as they see all the information in their trusted and familiar wallet.

We are increasingly seeing increased functionality and levels of integration driven by all the wallet providers, for example, Google Wallet supporting cEMV PAYG and also on transit agency issued virtualised cards. This includes buying direct from Google Maps and also period passes, such as the Orca Card in Seattle.
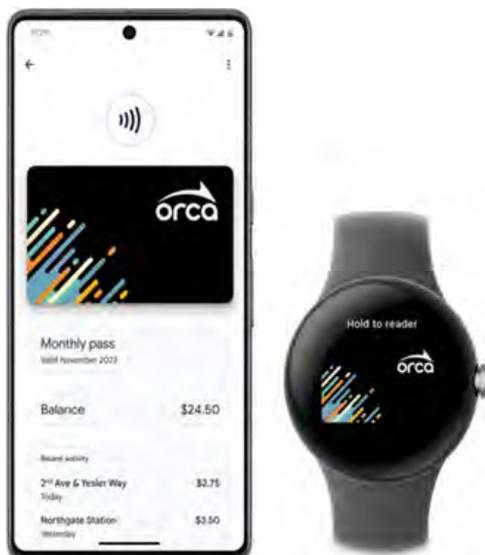
Credit: Orca

This move away from agency issued physical smartcard (media) means potential significant cost savings for agencies and operational efficiency. The total cost of ownership of these types of solutions is high including card purchases, personalisation of the cards, distribution costs, ATMs, ticket office and third-party sales commissions.

It is possible to remove a good proportion of these direct agency costs, which is vital in cash strapped transit agencies around the world.

Allied to this is the way that agencies are getting smarter in their procurement strategies. Gone are the days when agencies had a single source procurement and relied on vendors 100%. Agencies now are doing step by step approach to upgrades and then modular procurements, taking more responsibility for the integrated solutions and more of an operational involvement. This drives better seamless digital customer experiences, but in a more cost-effective manner, with more agency involvement.

Future

Frictionless travel - the promise of UWB

Emerging technology in mobile such as Ultra-Wideband (UWB) which is already supported by most mobile devices, could revolutionise the user experience of gates and validators, where the gate seamlessly opens when you approach or the validator confirms your presence automatically. Removing completely the need to tap a phone or card or worse physically insert a paper ticket.

While further increasing customer convenience such solutions will also benefit operators by helping them manage busy gate-lines and reducing dwell time for bus and tram loading and unloading.

This use of UWB is far more accurate and effective than Bluetooth presence detection solutions which have suffered from variations in technical standards and poor and or inconsistent customer experiences.

The way to go

Transit agencies, their technology vendors and the wider payments and mobile ecosystems have an opportunity to drive much more integrated customer experiences, with easy to use and understand mobile PAYG, prep-paid solutions, with card virtualisation and cash apps.

The use of OEM wallets, Apple and Google Maps and SuperApps, rather than agency built and maintained transit apps will be the way forward for most users, with other solutions still being required for the edge use cases and social inclusivity.

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