Why Consider Open Ticketing Standards for Account-Based Ticketing?

An insight paper from
Calypso Networks Association
& OSPT Alliance
The coming years will be defined by a migration from legacy automated fare collection (AFC) systems toward some form of account-based ticketing (ABT). By championing openness, the industry can ensure this technology realises its full potential in both innovation and adoption.
Touted as the natural evolution of legacy automated fare collection (AFC) systems, account-based ticketing (ABT) enables operators to address several of the challenges they face today, as well as realise greater innovation and improved revenues. Though rarely discussed in the industry, open ticketing standards can not only support ABT models, but can also deliver public transport operators (PTOs) stronger ROI, among numerous other benefits. Presenting the business case for open ticketing standards in ABT will form the basis of this paper.

The transport ticketing world is facing new and diverse challenges. These can be best understood as driven primarily by two key factors: the rise of Mobility as a Service (MaaS) and the COVID-19 pandemic.

Today’s travellers live in an age of on-demand, seamless and connected services, fueled by the success of services such as Amazon, Netflix and Uber. Digital consumers are now extending their heightened service expectations to public transport. This shift in consumer behavior is evolving in parallel with – and largely forming – the transport industry’s shift toward MaaS. Estimated to be worth $210.44 billion USD by 2024, the MaaS market aims to bring together multiple stakeholders to offer more intelligent, inclusive, and valuable service propositions by integrating across industries. Route planning services become integrated with hotel booking systems and connecting transport ticketing facilities, for example. All, of course, centralised on the consumer’s device.
Instead of seeking public transport services, today’s digital traveller expects an integrated travel experience that allows them to move through their daily life simply, cost-effectively and seamlessly.

For operators, meeting these expectations and delivering more seamless, on-demand services is imperative - both to maintain existing ridership and to realise new revenues and business opportunities.

The impact the Coronavirus has had – and will continue to have – on the industry cannot be underestimated. An early survey from Transport Focus found half of commuters expected to work from home more frequently, with 36% now expecting to work primarily from home with reduced office visits. This means operators are faced with tighter budgets. Anxious travellers, together with new hygiene requirements mean that as commuters return to public transport networks, demand for better throughput management, contact-free travel, and more flexible ticket pricing models is higher than ever. Even following the reopening of office spaces, working patterns are expected to remain permanently changed. The core revenue stream for transport operators - the 9-5 commuters – are therefore expecting far more flexibility in their seasonal tickets and, with daily routines adjusted inconsistently across the segment, their use of networks will be far less predictable.

ABT can bring real value to today’s PTOs. It offers considerably greater flexibility, insights, and control to operators, something which, as we’ve experienced most recently in the wake of the pandemic, is especially valuable to operators. In addition, it offers a means to cut costs, deliver innovation and keep pace with the contactless (re)evolution by enabling acceptance of multiple fare media. The benefits of ABT are widely discussed, but it is important to add to the narrative and view the technology through an open standards lens.

With any new technology or system, it is vital interoperability and collaboration are taken into account to ensure its successful adoption, evolution, and long-term sustainability. The transport industry must add open ticketing standards ABT to its agenda.
Why ABT?

ABT brings huge potential and a whole host of choice and different benefits to PTOs. There are several ways to implement ABT - an online ‘pure’ ABT model, or a more hybrid solution, utilising principles from a traditional media-based ticketing (MBT) system and/or integrating acceptance with open-loop models, such as EMV®. To best illustrate the different elements to be considered, let’s review the key benefits of ABT and how it compares with more traditional systems.

“The trust and convenience experienced by consumers through the rise of new digital services has translated into new expectations on today’s transport systems. Undoubtedly, calls for more seamless, on-demand services will be a key driver of the transport world’s migration to ABT.”

Philippe Martineau, President of OSPT Alliance
Reduce system TCO

By migrating the intelligence of ticketing systems to the back office, namely account information and fare calculation, operators simplify the complexity of the fare media issued and front office equipment (readers, validators, sales machines etc.), reducing initial investment and maintenance expenditure.

By combining an account with an online webshop or mobile application travellers manage directly, this also removes the need to interfere with any front office equipment and reduces requirements for physical sales and distribution infrastructure, further cutting costs. In an MBT system, both the upfront infrastructure investment and ongoing operational costs, such as the costs of ticketing vending machines (TVMs) and cash handling, are considerably higher and more complex.

Access more data

ABT systems offer operators access to considerably more data than is usually available in an MBT system’s back office. This helps inform the creation of new, more competitive pricing models and enhanced products, offers and services. An additional benefit – and one especially pertinent since the pandemic – is the ability to better manage traveller throughput too, with insights into peak times, routes and travel patterns. As daily routines are evolving and less predictable, this offers the agility and insight desperately needed by operators to continue to find new patterns and adjust as needed.

It is worth acknowledging the additional privacy implications of ABT, however. For any cloud-based system, data management is a point of vulnerability that needs careful consideration. In contrast in MBT systems, as all data is stored on the consumer’s fare media and no personally identifiable data is needed, the operator evades needing to store and protect any sensitive traveller information, providing robust protection in respect of regulations such as GDPR.
Enhance business models

As a result of the additional accessible data, operators can leverage more variable pricing models to encourage better usage around peak hours and deliver smoother services. Updates to passenger ticketing needs, such as season ticket options, can also be amended easily without needing to re-issue a ticket. For operators who have enabled links to bank cards, some are even implementing post-payment fare management systems for travellers, deducting accounts at the end of each month according to travel made, managed with a daily cap. This model offers considerably greater flexibility and convenience to users and is just one example of how operators can build and re-build more value and agility into their systems. In uncertain times, this provides greater security for operator margins. Not to mention that the reduction in cash handling can realise significant savings too.

Consumer convenience

Operators have the ability to offer consumers a range of fare media and choice in what they use, including contactless travel cards, smartphones, wearables, and bank cards. As no value is needed to be stored on the device, just an ID linking to a cloud-based account, travellers can then choose from multiple devices to best suit their needs according to their situation – for example, using a wearable when out exercising. It also means that losing a travel card, for example, no longer means losing all stored value.

Travellers can also more conveniently track and manage their usage, ‘top-up’ on the go, and purchase tickets online, benefitting from servers that can provide considerably more detailed usage history. If fare media is lost or stolen, it is also a much simpler process for the consumer to manage directly and without needing to visit a service desk.

Minimise on-the-ground support

In addition to improving consumer convenience, the ability to manage accounts online also reduces the number of passengers that need to purchase tickets in the transport network, reducing reliance on TVMs and desk support. Following the pandemic, this also enables a more ‘touch-free’ journey through the transport network and reduces the need for shared use machines and queuing.
What can open ticketing standards do for ABT?

Together, the promise of such compelling benefits has rightly generated an industry buzz around migration to some form of ABT model. There are, however, several prevailing misconceptions and inaccuracies that are skewing discussions and impacting the industry’s understanding of the technology.

Often, when the term ABT is discussed, what is actually meant is an open-loop ABT model. As mentioned earlier, there are several ‘flavours’ of ABT and while EMV open loop is one, discussing it in isolation fails to present operators with the complete view of implementation options. Secondly, the exclusion of open ticketing standards from the ABT dialogue promotes the misconception that leading open standard AFC models are unable to support this transition of intelligence to the back office.

In fact, these robust, proven open ticketing standards and more traditional MBT models can bring immense value to ABT systems, only the narrative is more nuanced. For operators to best select the solution and migration path for them, greater understanding of the benefits that open ticketing standards can deliver is imperative.
Operator autonomy
Migrating to ABT is a significant system change, making the communication between validators and the central system even more important. Operators must be able to trust and control this communication to avoid an industrial lock-in similar to the one seen today with some card-centric systems.

Championing openness across the system is essential – whether in a card-centric, cloud-based or hybrid model. By standardising the interfaces between customer media, terminal, secure access module (SAM) and back office; and shifting the customer media processing into the universal SAM – physical or virtual – and the back office, operators can achieve ownership of their business rules and bypass dependence on system integrators which, even for minor updates, can be costly. With operators in control, they can have faith in the transaction report and the receipt of the funds anticipated without reliance on third parties.

Reduce costs
Open technologies are cheaper to implement, roll-out and manage long-term. Without vendor lock-in, operators are able to choose technologies best suited to budgetary requirements and upgrade at a pace they dictate. This makes delivery of new systems like ABT more accessible, as lower cost technologies such as cards can be selected that in turn, are more cost-effective longer term.

It is also important to consider some additional costs specific to EMV open loop ABT. In those systems, a neutral evaluation of cash handling costs to operators against fees incurred by schemes is required. Not to mention that the testing and certification costs entailed to align with the payments industry quickly mount up, resulting in higher cost terminals and readers for operators.

Safeguard investment
Migration to ABT is a significant investment. As open ticketing standards champion backwards compatibility to previous standard iterations as they advance, operators can feel confident that their systems can continue to be upgraded quickly, cost-effectively and without compromising interoperability. These open standards also offer greater flexibility and simplicity to expand and upgrade systems in the future with seamless interoperability and lower costs.

Champion innovation
In the age of MaaS, integration with new players is becoming more imperative, something dramatically simplified in an open system. Truly open associations that welcome input and participation across the ecosystem can deliver the most comprehensive, innovative solutions. By pooling expertise, innovation is fast-tracked and incorporates the unique needs of all stakeholders. Plus, by levelling the playing field, vendors are encouraged to create more competitive, innovative solutions.
Considering EMV

EMV, as mentioned earlier, is just one way to implement ABT. Moreover, it need not be part of an ‘all or nothing’ approach and can sit alongside closed-loop ABT systems. The convenience offered by EMV acceptance is high but there are a few important factors entailed with a pure EMV approach that operators must also consider.
Fare game

Without owning the fare media, most EMV open loop systems implement a flat fare (usually one cost covering an amount of time, such as a day fare) across the network. Firstly, this limits some of the aforementioned benefits of analysing and implementing better pricing models to manage traveller flow and improve service quality.

More crucially, perhaps, is that this model is considerably less cost effective for regular commuters, concessions and children who would usually benefit from a discounted fare. Considering the impact post-pandemic and the more complex season ticket requirements of commuters, a pure flat fare model limits the level of flexibility required to respond to the evolving commuter needs.

One for all?

While EMV acceptance brings great benefits to irregular travellers and tourists, it is worth noting not all travellers have a bank card. This restricts access to the service among non-cardholders, including children, and prohibits the purchase and transfer of tickets to others.

As Andy Yip of Octopus International Business said:

“Operators need to keep in mind that not all passengers will have an EMV card. To be inclusive and adhere to the principle of public transport – to provide transportation to (all) public, a more inclusive and convenient option should always be available to everyone.”

Furthermore, it is also worth acknowledging that not all EMV contactless specifications are created equal either. Each major payment network, such as Discover, Mastercard and Visa, has its own ‘flavour’ of EMV. This means to accept bank cards from all, additional implementation, testing, and certification requirements are entailed for each brand and in turn, at each acceptance interface. This can be a complex and costly exercise.
Love your legacy

Projects rarely plan to – or want to – entirely rip and replace legacy smartcard systems with EMV. With a Snapper Report finding most open loop migration projects only plan for 20% adoption of EMV, ROI needs to be closely analyzed. The longevity of TfL’s Oyster scheme speaks to this. Its launch in 2018 of a new TfL app enabling passengers to top-up their Oyster card and review their travel history ‘on the go’ via their smartphone is a strong example of an existing system making itself more appealing and user-friendly. Indeed, despite being arguably the EMV in transit success story, TfL is still clear it has no plans to phase the Oyster scheme out, saying: “There will always be customers, such as children or those who need to manage their finances more carefully, who will benefit from the card.”

Even for pay-as-you-go Tube and rail, Oyster still represents 40% of journeys, and it remains popular among season ticket holders and for pre-purchased tickets.

How big is the existing traveller base? How important is brand? What are the demographics of travellers? How widely adopted is EMV contactless in the area? These are just a few factors to assess before defining an EMV implementation strategy. Considering a more hybrid approach can be transformative for an operator’s ROI. What’s more, once an operator has migrated to some form of ABT model, it is far simpler to extend and integrate with third parties. As such, should requirements change further down the line, EMV acceptance can be added far more easily, without the need to rip and replace existing systems.
Migration to ABT, regardless of strategy, still requires some important technical consideration around risk management. A major benefit of card-centric systems is their resilience to network outages, as no live connection to the back-office is required. Despite the significant advances made in network connectivity in recent years, however, a purely online ABT system still would not have the speed or reliability to maintain the throughput levels demanded of transport networks.

So, how can risk be managed offline?

An effective risk management solution can be implemented by adding a small amount of information on-card, an ID and a register. The card’s ID information relates directly to a customer profile stored in the back-office so when connected, depending on the account’s funds and factors such as transaction history and top-up frequency, the card can be updated to either a positive or negative register. As such, this (positive or negative) register is stored on the card ‘offline’, meaning readers and validators can get a quick assessment of whether the traveller can be trusted to have sufficient funds to travel, even in the absence of network connectivity.

“This stored approach is a win-win – leveraging the robust operation and security of traditional smartcard AFC systems, with the flexibility and agility of ABT.”

Philippe Vappereau, Chairman of Calypso Networks Association and ticketing expert to the General Director for Services, Marketing and Customer Experience at RATP

It is worth noting that, in EMV systems, a unique ‘payment and processing later’ model is implemented to accommodate where funds may not be available. This settlement process is possible to set up with issuers and there are several possible risk mitigation strategies such as preauthorisation at first entry to a network, card black-listing and replaying EMV authorisation requests until the payment is accepted. However, these all come with additional complexity and cost and in turn, create additional partnerships that require further time and money to manage.
Deciding to adopt a technology is one thing. Making the business case is quite another. Each market is relatively unique, so there is no “template” RFP. That said, by heeding the considerations raised in this paper, operators can ensure their strategy both meets the needs of the ridership and suits their budgetary requirements.

Open ticketing standards and a closed-loop ABT system can offer immense benefits, even as part of a hybrid implementation. Once implemented, it’s a natural evolution and far simpler to extend to support open-loop EMV too, as and when there is the business case for it. The coming years will be defined by a migration from legacy AFC systems towards some form of ABT. By championing openness, the industry can ensure this technology realises its full potential in both innovation and adoption. Open ticketing standards also offer protection to the full ecosystem and ensure ABT evolves in the most effective, sustainable, and valuable way for the whole transport ecosystem.

Much work has already been done. Two compelling, proven and truly open ticketing standards exist to support ABT: CALYPSO® and CIPURSE™, managed by Calypso Networks Association (CNA) and OSPT Alliance respectively. Standards that, in turn, can also complement EMV implementations.

Both associations are championing the realisation of truly open ABT systems – you can read previous insights from both CNA and OSPT Alliance in their respective whitepapers. The advancement of this technology and continued joint efforts to educate the ecosystem on implementation best practices are key points on the agenda of their collaboration.

For this technology to truly realise its potential, it needs insights, input and collaboration with all players in the industry.

Find out more about how CNA & OSPT Alliance are collaborating to transform the future of open transport ticketing standards

@CalypsoNet_Asso
@OSPTAlliance
contact@ticketingopenstandards.org