



The global open standards powering
the transport ticketing revolution

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Introduction

Public Transport Authorities (PTAs) and Public Transport Operators (PTO) find themselves uniquely situated to address a host of global social and environmental challenges.

They have the capacity to support national and international efforts to lower carbon emissions, improve air quality, enhance community mobility, create equitable transport systems, drive economic opportunity and play a role in the development of smart cities. In order to do this, local transport must provide an experience that is seamless, cost-effective and reliable enough to draw people from private vehicles to public transport systems – and maintain their loyalty.

Technology is at the heart of public transport's power to shape today and tomorrow, and to provide passengers with seamless experiences they've come to expect. Currently, PTOs and PTAs have a range of technologies available to support their ticketing systems. In the past, this has allowed local transport authorities to create or adopt systems that meet the unique needs of the community. However, the rapid pace of innovation and new demands on public transport ticketing in light of concerns such as public health, environmental, cybersecurity (to name a few) bring to the forefront the need for new conversations about the role and value of open standards in the digital ticketing community.

For PTOs and PTAs facing daily operational challenges in the new post-pandemic reality, discussion around the need for global open standards may not seem pressing. Upon a little reflection, however, it quickly becomes apparent how relevant the adoption of technology that connects to universal consumer media relies on the use of global standards today and in the future.

In this ebook, digital ticketing expert Infineon examines global opens standards as they apply to digital transport ticketing and provides an overview of the current global, national and local standards in play today, before exploring the numerous benefits that adopting global open standards technology offers PTOs and PTAs.



A decorative graphic consisting of three white lines meeting at a central white dot. One line extends from the top-left towards the center, another from the top-right towards the center, and a third from the bottom towards the center. The background is a solid purple color.

Part 1

What are open standards –
and why do they matter
to PTO/PTAs?

1. What are open standards?

When it comes to **digital transport ticketing**, open ticketing standards refer to a standard that is collaboratively developed by the transport community, publicly available and can be freely used by all stakeholders under the same conditions in order to avoid **vendor lock-in**.

The purpose of open ticketing standards is to enable transport ticketing solutions that are:

a

Secured: PTOs/PTAs need to be able to maintain the integrity of the ticketing system, protect payment processing and financial transaction and protect passenger data.

b

Convenient: Passengers expect to be able to use tickets quickly, easily and while on-the-go and do not want to be limited to purchasing tickets in real time at on-site ticketing kiosks.

c

Interoperable: Additionally, passengers want to travel seamlessly from the front door to the final destination, without spending excess time and effort securing separate tickets for each leg of the journey.

d

Choice: Travellers want to use a ticketing media that meets their needs and personal preferences. The pressure is on PTOs/PTAs to offer a range of payment and access control solutions that align with ever-advancing passenger expectations.

e

Stability: By creating a more competitive marketplace, PTOs/PTAs benefit from supply and cost stability.



2. From where do open standards come?

Today's consumers operate in the midst of a digital revolution and expect transport ticketing to mirror the convenience, security and innovation they experience in other areas of their life, such as the workplace or entertainment sector. Therefore, digital transport ticketing must be built on innovation, transparency and trust. To understand how global open standards contribute to this end, let's look at where they come from and how they operate:

2.1. International bodies create overarching sets of standards and specifications that then guide the development of industry specific standards, schemes and protocols at the global, regional and local levels.

2.2 Global standards-setting bodies include:

2.2.1 An independent and non-governmental organization, the **International Organization for Standardization** (ISO) is comprised of 166 national standards bodies that collaborate to develop and publish voluntary standards that are appropriate for the marketplace and cover a huge range of products, processes and activities.

2.2.2 The **Common Criteria** for Information Technology Security Evaluation, known simply as the Common Criteria (CC), represents the technical basis for an international agreement by which products can be evaluated and certified by accredited and independent laboratories. The CC is a driving force behind the adoption of mutual recognition of secured IT products.

2.3 Both the ISO and CC have international membership and operate at the global level, providing standards upon which many other bodies base their schemes for their own technologies and use cases.

3. Payment and Ticketing Standards

In addition there are other standards bodies that also operate at the **global level**, creating standards schemes that pertain more specifically to payments and transport ticketing. These standards schemes fall into one of three categories:

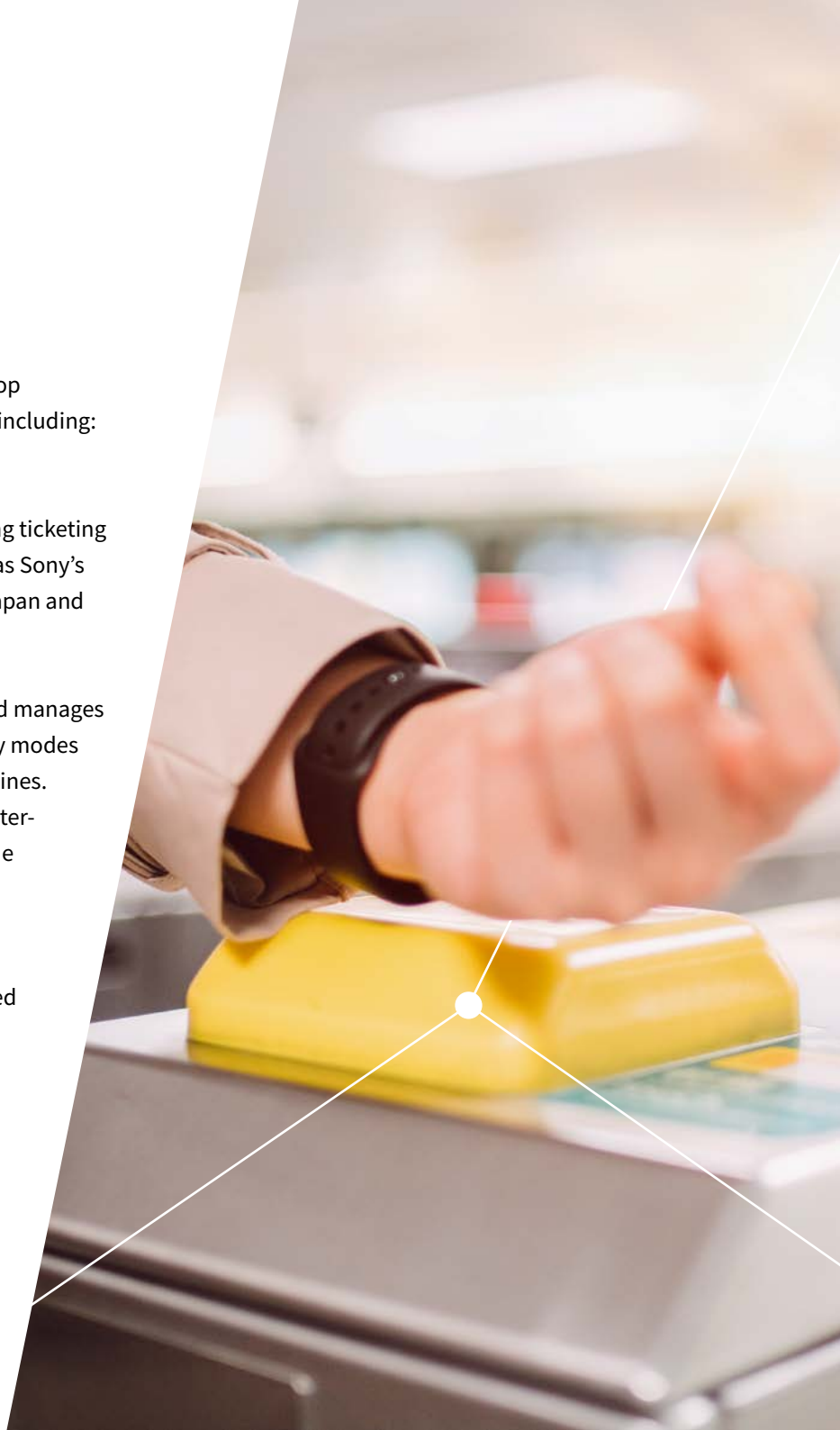
1. Worldwide, open non-proprietary ticketing standards for **closed loop ticketing**, including organizations such as:
 - a. Calypso Network Association is the governing body for the Calypso open, secured ticketing standards. It is used in more than 25 countries and over 170 cities globally. It has been designed by transport operators for transport operators to ensure long-term usability.
 - b. OSPT Alliance provides the CIPURSE™ specifications that create a foundation for developing highly secured, interoperable, and flexible mobility services solutions.
2. Worldwide, open non-proprietary EMV® payment standards **for open loop ticketing / account-based ticketing (ABT)**, set by:
 - a. EMVCo, a global technical body that facilitates worldwide interoperability and acceptance of secured payment transactions by managing and evolving the EMV Specifications and related testing processes.

3. Standards associated with the use of open loop technologies for closed loop ticketing systems, including: e.g. EMV, FeliCa, ITSO,VDV, etc.

An example of standards at work for transporting ticketing at the regional level include technologies such as Sony's FeliCa technology, which is used throughout Japan and all of Asia and aligns with ISO specifications.

At the national level, the UK's ITSO develops and manages the standards that govern ticketing across many modes and operators of transport and across regional lines. In Germany, Der Verband Deutscher Verkehrsunternehmen (VDV) serves a similar function, to name just two of them.

At each level, these bodies guide PTOs/PTAs to select ticketing solutions and technologies based on expert technical standards for security and functionality and that also deliver significant benefits to consumers and transport operators alike.





Part 2

The benefits of global
open standards for
transport ticket

The benefits of global open standards for transport ticket

While most ticketing technology is built at the fundamental level to ISO or equivalent standards, finding a solution that aligns to open application and security standards designed for the transport and payment ecosystems is paramount to realizing the following benefits:

1. Convenience

is king for consumers. To attract and retain passengers, PTOs/PTAs must be able to offer the option to purchase digital ticketing that is available through mobile platforms and that work with ever-evolving mobile and wearable technology.

This means that digital ticketing solutions must keep up with the pace of innovation, requiring PTOs/PTAs to adapt, pivot and upgrade quickly.

Consumers expect Convergence, or the ability to use their preferred payment device be it a card or wearable in any transit system. Furthermore, they expect this ticket to live in a digital wallet on their smartphone phone, watch, or token and to be easily reloadable.

2. Mobility as a Service (MaaS)

or the integration of various forms of transport (e-bike, train, bus, tram, scooter, etc.) into a single on-demand service takes passengers from their front door all the way to their final destination.

MaaS will become increasingly important in the development of smart cities and will play a key role in attracting passengers from private vehicles to public transport.

The ability of PTAs/PTOs to participate in MaaS systems depends on the interoperability and upgradability of their ticketing solutions, which in turn facilitates the next benefit of global open standards adoption.

3. PTAs and PTOs

Once PTAs and PTOs deploy ticketing technology that enables interoperability and can be easily upgraded they can collaborate with other transport vendors. Not only does this further promote the development and adoption of MaaS, but it also creates possibilities for cross promotion and loyalty rewards schemes.



4. Adopting technologies

Additionally, adopting technologies that provides passengers with door-to-door, easy to access, seamless travel options, makes public transport a viable alternative to private vehicle usage and encourage greener environmentally friendly practices.

By making digital ticketing options the easiest and most preferred form of ticketing, PTAs and PTOs reduce plastic consumption, shrink their carbon footprint and reduce waste from old and discarded physical tickets.

5. Global standards

don't just benefit consumers and the environment, they also benefit the bottom line by supporting the development of sustainable, future-proof ticketing systems for PTOs/PTAs.

Working as a community, technical skills and expertise are combined to analyse and predict future requirements, for innovations and technical evolutions to be backward compatible.

Achieving technological sustainability empowers transport operators and authorities to transform dedicate resources to growing their service in flexible, cost-effective, and more competitive ways, putting them in control of their network long into the future. The most essential contributor to this is the availability of guidelines on the infrastructure and terminal side that allow PTAs and PTOs to easily upgrade their systems to future technologies or to needed infrastructure adoptions. Previously mentioned associations and bodies have already taken that on.

6. Using open standards

Ultimately, using open standards, that can be sourced across multiple vendors, allows that PTOs/PTAs have control of their systems and encourages competition in the marketplace.

This allows costs are contained, and that a PTO/PTA is not restricted to the timeline or restrictions of a single supplier. Having a base line that all suppliers are working within, supports open-tendering processes allowing future technology costs to be maintained in a reasonable range.



Conclusion

To realize the benefits of global open standards, transport authorities and operators must embrace technology that is designed in accordance with the standards and that can evolve with transport community demands without restrictions, optimize innovation, and empower transport operators to thrive in highly competitive environments. Infineon as the market leader for account-based ticketing and open standards' solutions foster this change to a future proven, carbon neutral and innovative path for PTAs/PTOs by supplying EMV, Calypso & CIPURSE solutions for both – innovative consumer devices & tickets and SAMs for required terminal infrastructure upgrades.

Checklist to future-proof your transport network

Choose providers that support open ticketing standards, that you can participate in defining



Avoid limiting your options. Make systems sustainable



Choose a partner with transport expertise



Cost for authority implementing /
return on investment



Further reading

What are the benefits of open transport ticketing standards to operators and authorities?

About Infineon Transport Ticketing

Infineon technology assists PTOs / PTAs in smoothly and gradually migrating from proprietary legacy systems to open standard-based solutions and state of the art secured products that support competitive tender processes. Products provided by Infineon support gradual migration as infrastructure (readers) may be updated / upgraded / replaced step by step.

Infineon drives open, flexible ticketing from the heart of transport communities. It supports open technical specification development as defined by the ticketing community to encourage competition, contain costs, and inspire innovations.




Future-proof your transport network with Infineon


Checklist to future-proof your transport network


- Choose providers that support open ticketing standards
- Avoid limiting your options
- Choose a partner with transport expertise

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