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Intelligent transport systems — Common Transport Service Account Systems —

Part 1: Framework and use cases

Partie 1: Cadre et cas d'utilisation

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Foreword

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This document was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

A list of all parts in the ISO 21724 series can be found on the ISO website.

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Introduction

Many transportation services (e.g. public transport, tolled roads, parking, city bike rental etc.) require payment for use. This has previously caused each service provider (e.g. public transport authorities, toll authorities, public and private parking providers, etc.) to develop independent, stand-alone payment systems to enable users to pay for access to their service. Consequently, a traveller who traverses multiple transport modes had to purchase services at more than one point of sales location. If the payment systems are integrated, then the transport service user may possess more than one payment/ticketing media, application, and/or account. However, in public transport there have for many years been products that enable a traveller to benefit from a seamless journey from A to B using several transport means, modes and operators. These products have been available through cooperation between operators and regional and national tariff schemes.

The transportation industry has seen an evolution in the collection of fares and fees throughout its history. The main drivers of that evolution have been the pursuit of increases in customer convenience and system efficiencies. Automated Fare Collection has progressed from use of magnetic technology to contactless smart cards, and recently to open financial payments and mobile payment applications.

Automated Toll Collection began with the use of simple read-only tags and is now looking to new approaches and technologies for future payment system advancements. Examples are open road tolling, vehicle miles travelled methods, and technologies such as Dedicated Short Range Communications (DSRC), Global Navigation Satellite System (GNSS), and Cellular Networks (e.g., GSM). Agencies have used these high-technology systems not only to enable automated payment and speed throughput, but to capture data, improve system reliability, and perhaps most important, to improve customer service.

Historically, transportation payment systems have covered only one service provider. Therefore, public transport ticketing/payment systems have not typically been technically integrated with charging/payment systems for tolls or parking and vice-versa. The reasons for this isolated nature are twofold. The first is that the individual service providers had little interest, from a business case standpoint, in integrating their purpose-built ticketing-, charging- and payment systems. The second is that technically this is a difficult and costly exercise, owing to the fact that the systems are typically proprietary and were designed to enable payment for one transportation service. However, in public transport, more and more electronic ticketing systems are supporting communication in conformance with ISO/IEC 14443 or ISO/IEC 18092. This implies physical and technical interoperability, but also that the ticketing applications have to be interoperable as well, as there has to be a contractual interoperability.

Some integration has occurred, for example between commuter or urban rail and parking. A traveller can often pay for both parking and their train ride with a common medium. But these examples usually occur only when there is one transport service provider for both the parking and public transport.

Other examples exist for purpose-built integrations of payment systems across two or more transportation modes. In some Asian countries like Japan and Korea there are several implementations of integrated payment systems for public transport and tolling. Examples include the use of a toll transponder that allows the insertion of a public transport card. The integrated payment systems are mostly based on a common payment media, i.e., smartcard with stored electronic value on the card.

In the past 5 to 10 years, the public transport industry in particular has embraced the development of Common Transport Service Account systems. In this approach, transportation products are stored in a central account rather than on the payment media. This architecture allows the system front end to be very flexible to enable customers to use contactless credit and debit cards and contactless mobile payment and ticketing applications alongside transport smart cards.

The subject of this document is to study the convergence of toll fee collection and payment and public transport fare collection and payment through the integration of the systems' accounts rather than their fee/fare payment media. This concept is flexible and can also include payment systems for other transport services, such as parking, electric charging stations, rideshare, bikeshare, and other disruptive transportation modes. Using an account-based backoffice architecture (prevalent in the toll

industry), is becoming increasingly common in public transport and other transport service payment systems in the United States and Europe.

The technical approach is to link accounts used in multiple transportation modes to create a common transport service user account. For customers, this creates a seamless, end-to-end experience where they can easily access and pay for all transport modes for which they opt-in: public transport fares, toll fees, rideshare, etc. For operators, this common or linked account allows for additional customer benefits such as incentives, discounts or loyalty points strategies, and can add valuable customer usage data to inform their planning and operations, enhance mobility and reduce congestion in regions.

This document examines the concept, functional requirements, and benefits of converging payment systems for tolling, public transport and other transport services through a central account linkage. Readers interested in how this can be achieved by use of a common media are advised to access ISO/TR 19639.