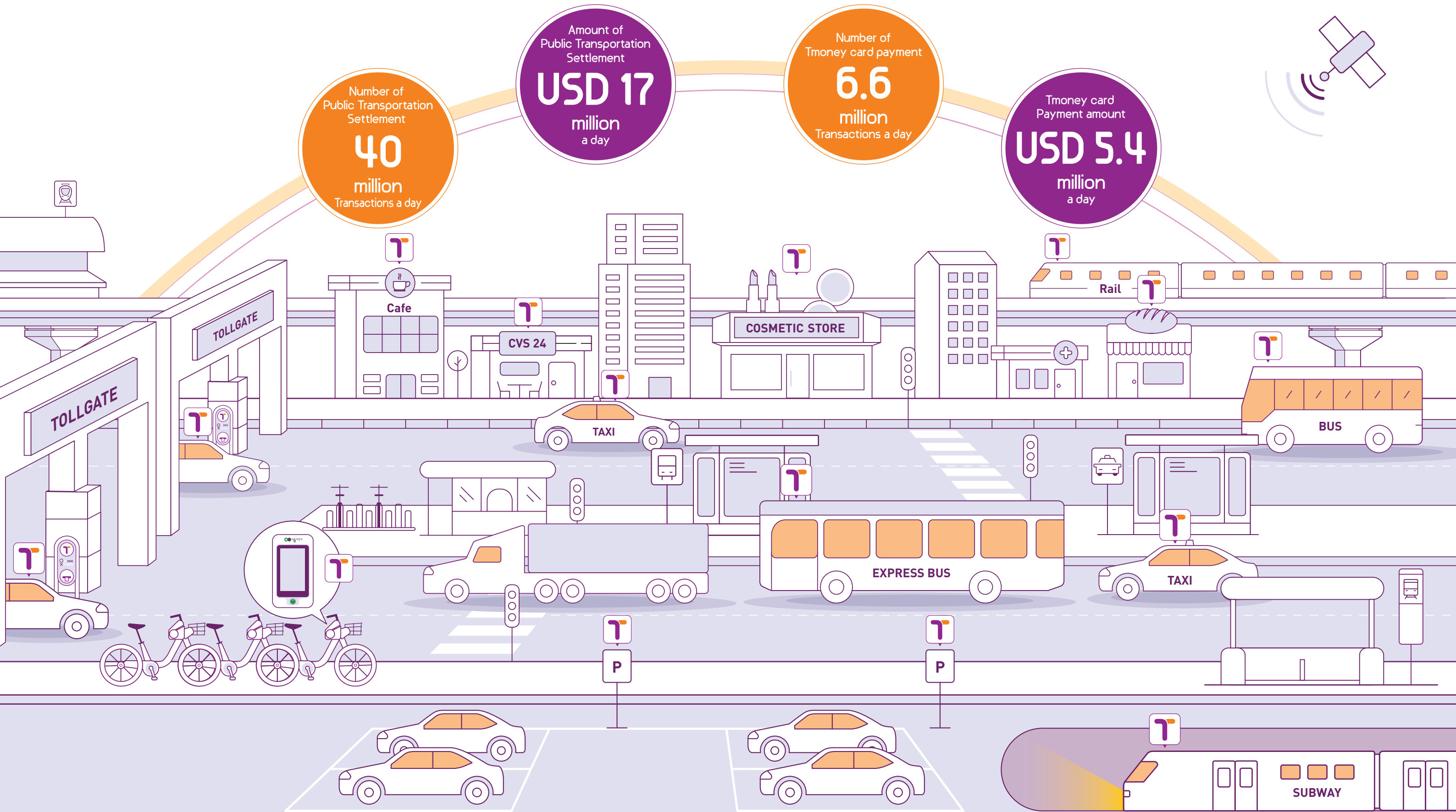




# Tmoney at a Glance

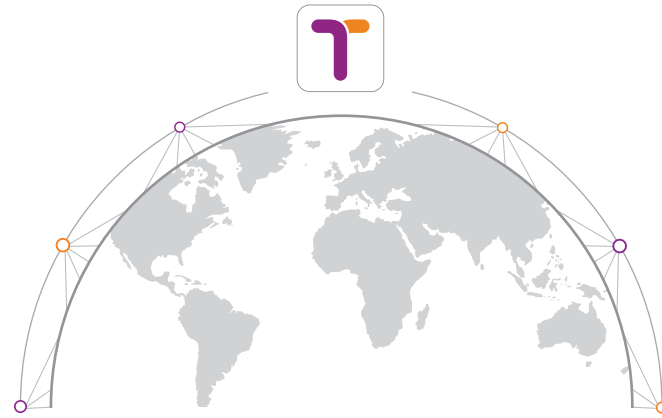


# World Class Smart Mobility & Payment Service Company

Tmoney Co., Ltd is an internationally recognized and industry leading payment service provider based at the heart of Seoul, South Korea.

We were established by Seoul Metropolitan Government and LG Group in 2003 for the purpose of implementing Integrated AFC(Automated Fare Collection) system for public transportation.

We laid our first corner stone by successfully carrying out this mission and for the last 2 decades, we were able to not only continue expanding scope of the business to many different areas including retail and public institutions but also bring technological innovation.



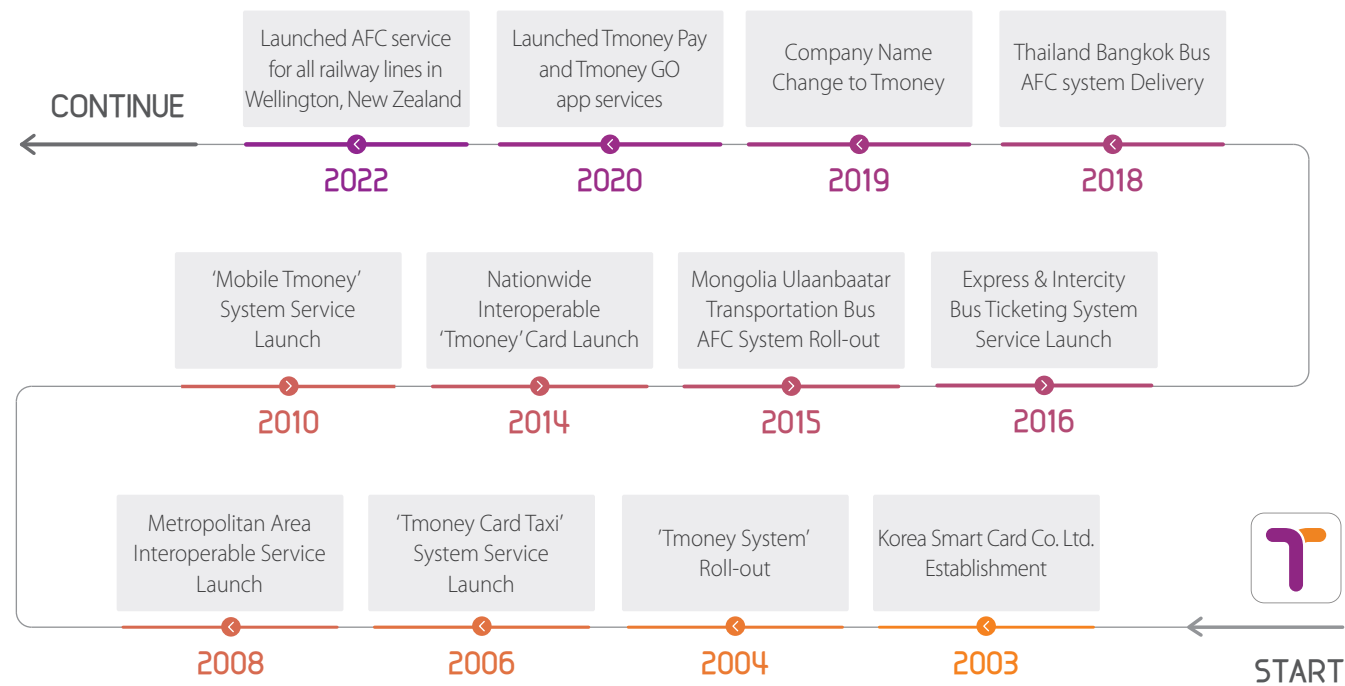
**Mission**

- Provide Smart Mobility & Payment Services to Make a More Convenient World

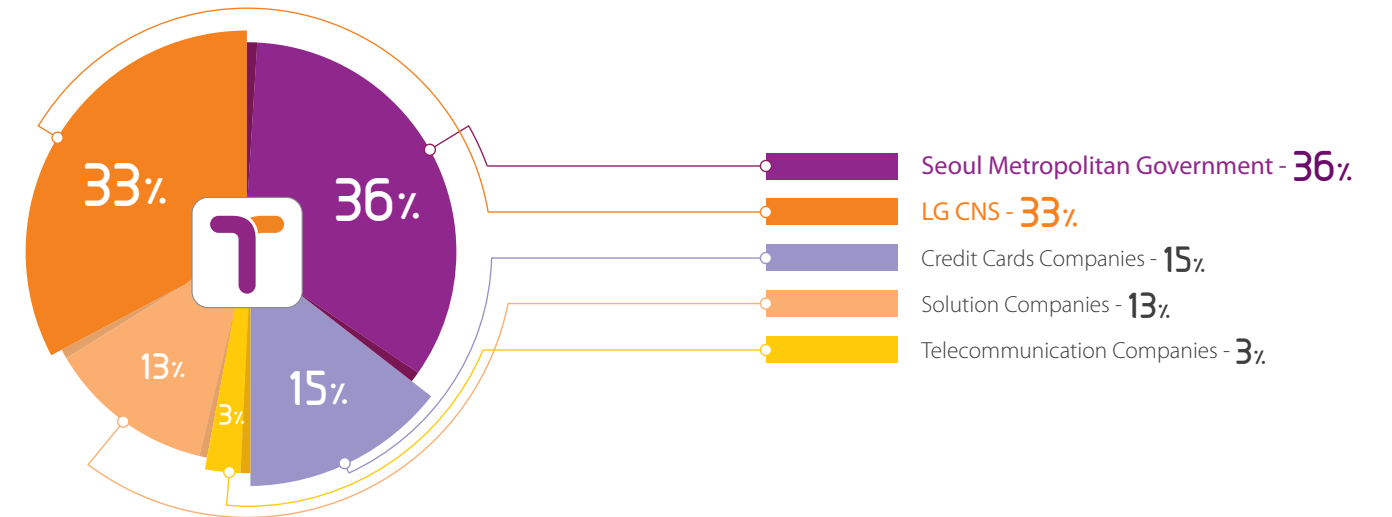
**Vision**

- World Class Smart Mobility & Payment Service Company

## History



## Shareholder Status



## Business Area

### Smart Mobility

Business sector to provide the optimal mobility through convergence with ICT and the infrastructure over Public Transportations (Bus, Metro), Taxi, Express Bus and so on.

- Integrated Settlement Operation
- Automated Fare Collection
- Bus Management System / Bus Information System
- Cooperative Intelligent Traffic System
- Mobility as a Service



### Smart Payment

Business sector to provide more convenient payment service in daily lives

- Pre-paid card issuer with affiliates
- Post-paid bank affiliated card
- Mobile Tmoney with Mileage Program
- Tmoney Pay
- Account-Based Ticketing (Korea Tour Card Tmoney)



# Tmoney Shares Its Innovative Experience With The World

## Global Business

Tmoney has proactively continued expanding its presence around the globe based on its core technologies and expertise, providing Turn-key AFC system implementation, consulting service and O&M (Operation and Management) business as a multi-service-provider to meet diverse needs around the world.

### Mongolia : Milestone for another success story from Seoul Best Practice

Population  
**1.4 million people**

Daily Transaction  
**640 K**

Service Open  
**2015**

Number of Buses  
**1,200 buses**

USCC (Ulaanbaatar Smart Card Company) was established to implement and operate Ulaanbaatar's New Transportation Card System (U-money).

Since its inception in 2014, USCC has been operating UB city's integrated fare collection system that includes the issuance of Smartcards and the clearing and settlement to numerous operators from mid 2015.

Passenger experience has been significantly enhanced by adopting U-money 100% and integrated fare collection system. Routes and schedules under operation are monitored and checked with the mandated ones through the BMS, indicating bus arrival/ departure time and number of alighting/ boarding passengers by every bus stop of each route; travel time, speed, traffic accidents of each route; other detailed information.

Success in Mongolia will be the foundation for a series of further projects in Central Asia.

### Revolutionary Transportation Reform in Seoul Metropolitan Government

Population  
**20 million people**

Daily Transaction  
**40 million**

Service Open  
**2004**

Number of Buses  
**9,500**

Number of Subway Gates  
**12,500**

Before the Seoul Public Transport Reform, metro services and bus routes were not adequately integrated. Reform adopted new fare policy, allowing free transfer among differing modes of transportation and vehicles. To execute this policy successfully, an electronic system for unified fare collection and settlement among operators was essential.

Seoul Metropolitan Government established a special purposed company called "Korea Smart Card Co., Ltd." who is the largest shareholder of Tmoney.

Implementation of unified public transportation system provided the citizens many benefits in using public transportation.

Smart card system played an important part in making this success possible.

### New Zealand (2007–Present)

- Wellington rail and bus e-ticketing and card system implemented (5 rail lines and 500 buses)
- Infrastructure service for a central system
- Settlement Processing carried out from Tmoney HQ in Korea

### Colombia (2012)

- Bogota bus e-ticketing system delivery
- BRT Card Reader and pre-paid card delivery
- BRT 3lines, 36 stations, 12,000 Buses

### Thailand

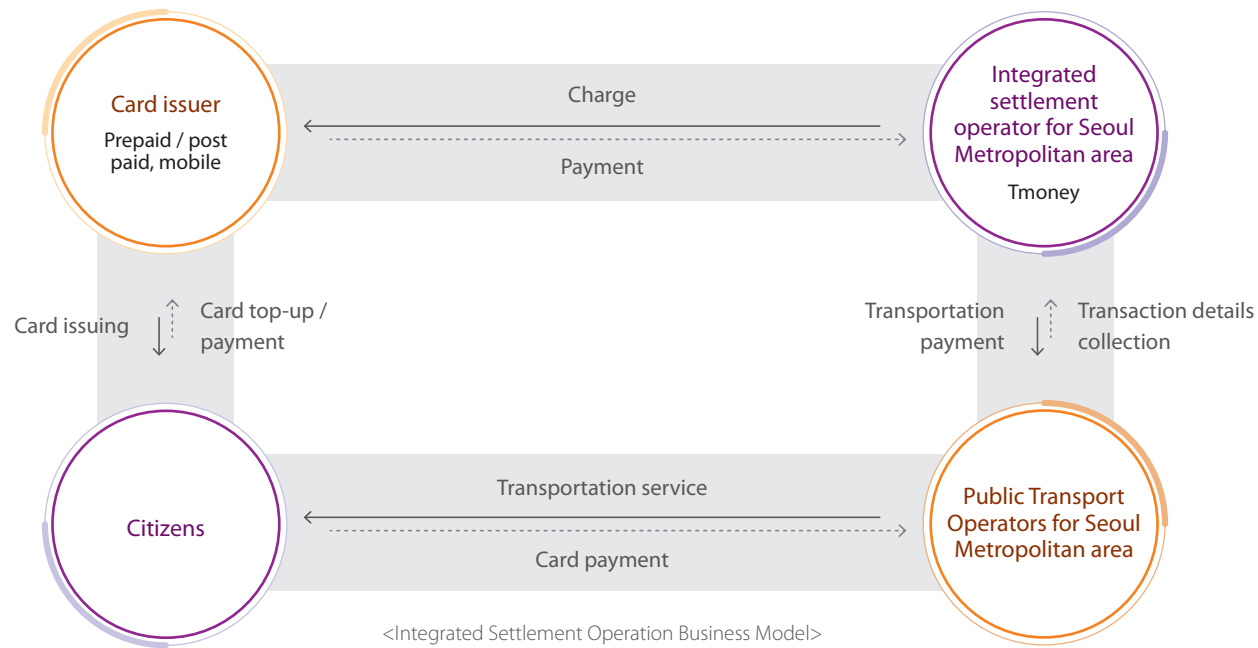
- 1. Project Management Service consulting (2013)**
  - Consulting of establishing government-led Integrated Central Clearing House
- 2. Bangkok bus e-ticketing system delivery (2017)**
  - Establishing public bus E-ticketing system for BMTA (2,600 Buses)

### Malaysia

- 1. Cashless Bus Ticketing System Implementation in KL (2011)**
  - On-board system including Ticket Vending Machine and Settlement System (1,600 Buses)
- 2. Project Management Consulting (2015–Present)**
  - Consulting for Government-led integrated Common Payment System (ICPS) business

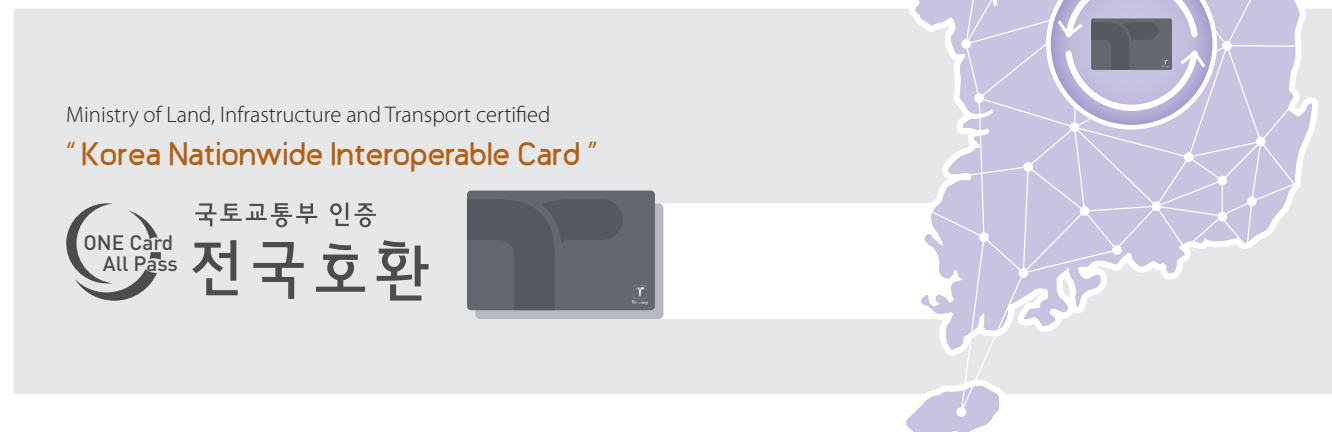
### Integrated Settlement Operator

Integrated distance-based settlement system operator not only for Seoul Metropolitan Area exceeding 40mil transactions a day, but nationwide over 58 cities including major cities such as Daejeon and Jeju island



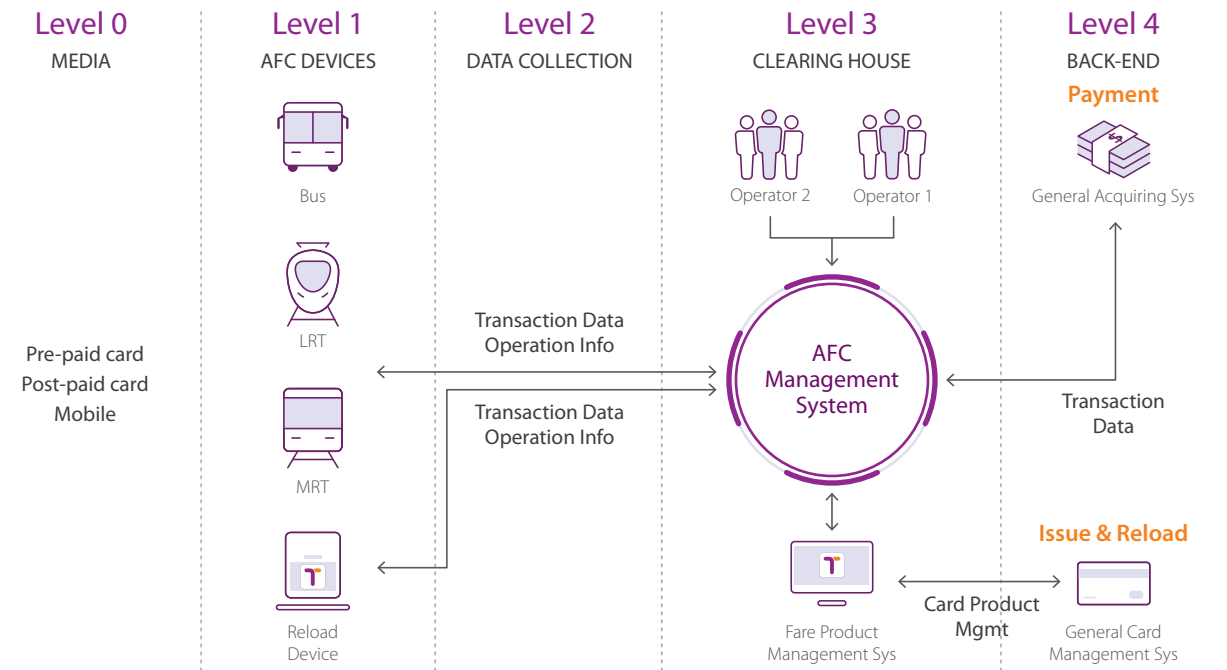
### Korea Nationwide Interoperable Card

For the first time in South Korea, Tmoney has been certified by Ministry of Land, Infrastructure and Transport as Nationwide Interoperable Transportation Card that enables citizens to ride buses and subways nationwide with a single card.



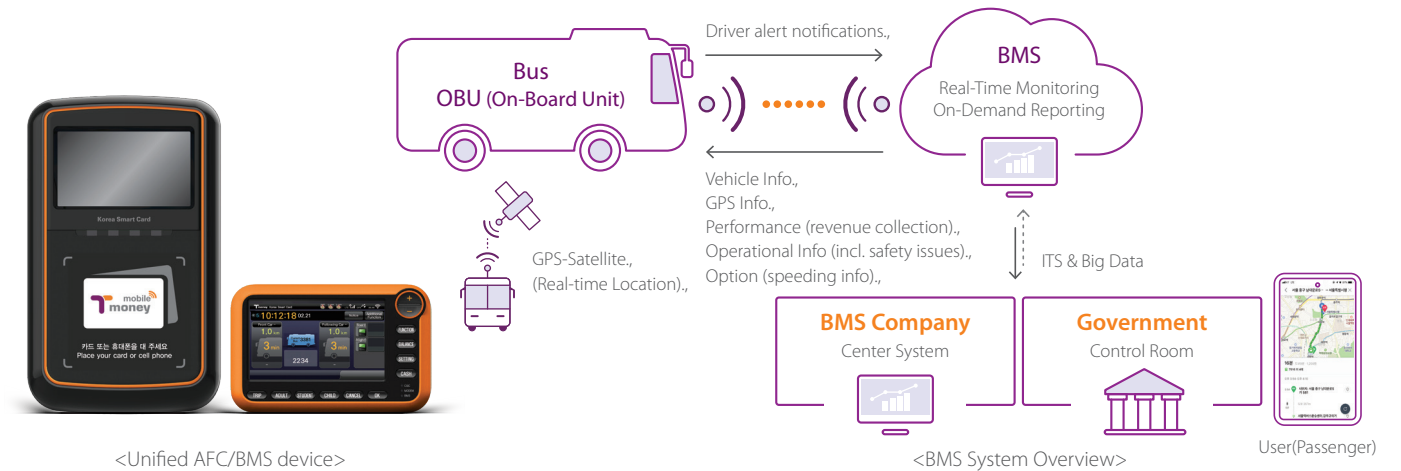
### Automated Fare Collection

Tmoney AFC is easily deployable system which enables you to integrate turn-key AFC solution into your public transport system; a system designed to provide smartcard and mobile device (NFC) based AFC, real-time BMS, and Remote Device Control services.



### Bus Management System

BMS transmits various operational data in real-time to the BMS center using a mobile or exclusive communication network. In addition, BMS center sends out operational commands and instructions to the buses over the network. BMS consists of vehicle devices (BMS device) and the BMS center (H/W, N/W, S/W, and Application System). At center system, you are able to monitor fleet activities and access to analysis reports of bus operation patterns and records that is to be reflected on future route & allocation plans. Tmoney's unified BMS device for both AFC and BMS function allows seamless and cost-effective system integration.



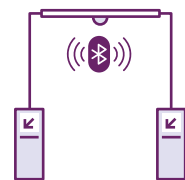
# Tagless, All New BE-IN BE-OUT Solution

The latest Be-in Be-out technology for equitable, seamless traveling service has been applied to the existing AFC payment infrastructure (terminals and collection system).

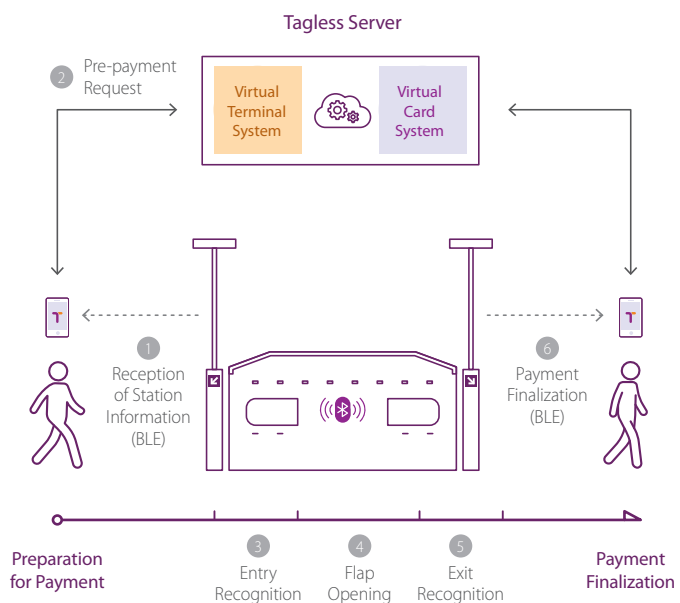
The Tagless solution connects users' mobile devices with the payment system, making it possible to pay for your travel simply by boarding a vehicle, without necessarily tagging a card. It guarantees a high level of accuracy utilizing the BLE communication in addition to multi-sensors from the gate and smartphone as a part of a positioning technology. The Tagless solution eventually allows faster payment than a card or mobile device. Experience enhanced quality of life.

## Rail

Station information using your smart phone BLE signal to execute pre-payment.  
Afterwards, Tmoney boarding recognition solution is applied to accurately detect users passing through the gate, and the information is collected to center system to complete payment.



### Tagless Solution for Rail

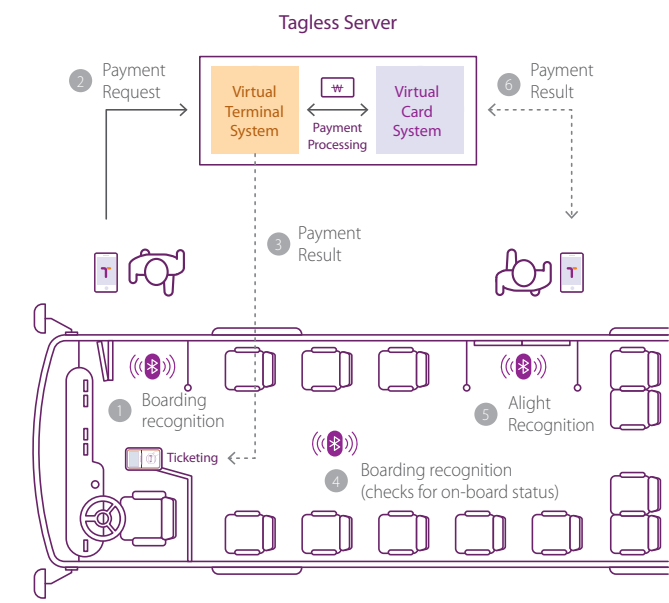


## Bus

Bus Tagless uses your smart phone's BLE communication technology to recognize boarding and execute payment. After a set period of time, recognition of on-board status is used to determine whether the user is still on board, and once user's alighting status is confirmed, the payment is completed.

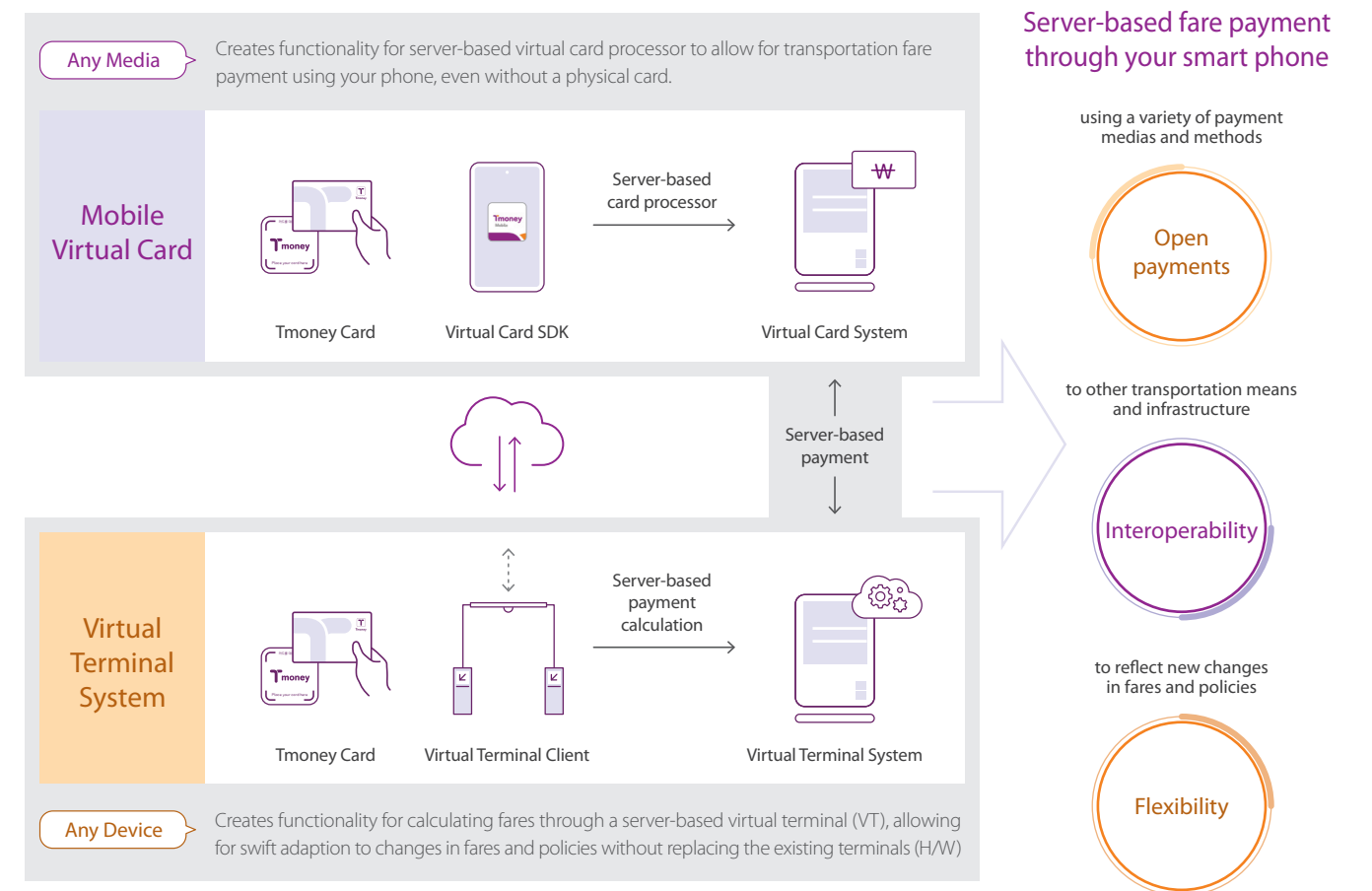


### Tagless Solution for Bus



## Transition to a server-based payment system

In order to accept a variety of new payment methods and changes in the mobility business environment, the transition to payment service using smart phone instead of physical cards and terminals is required. Implement Tmoney Tagless to establish server-based payment system with your existing terminals.



### Main advantages for each stakeholder

#### Government / Authority

The target service region can be defined selectively.  
Changes in fair policies quickly applied to buses/railways in the relevant area!

#### Operator

Server-based virtual terminals (VT) allow new fares and policies to be applied without reflecting changes to the existing terminals (H/W)!

#### Payment Service Provider

Embrace various trend-leading media with convenient mobile top-up and payment!



# Multi Solutions Integrated in a Single Device

Tmoney taxi solution provides not only convenience for passengers through a variety of payment methods, but also a variety of services including an app meter capable of applying flexible fare system to support an efficient taxi business, hailing, and AI TAXI that predicts passenger demands through big data analysis. This service has been validated in 72,000 Metro Seoul taxis and is to be extended to 220,000 taxis nationwide.

- ✔ Provides various services in single device, preventing duplicate investment in additional equipment
- ✔ Services are easy to be expanded based on Android apps
- ✔ Capable of flexible response to customer requests through simple customizing

## Key Features

### SMART App-Meter

Calculates fare by applying GPS and self-calibration algorithm

- Compensates for the limitation imposed by tunnels and underpass
- Flexi fares are applicable by zone, time and day of the week (Remote control by Center)
- Commercial Authentication Security Solution is applied
- Real-time based AI plan is to be applied

### AI Taxi

Provides demand forecasting service by big data analysis (history data by multi-dynamics including time, place, weather)

- Interfaced with navigation
- Accuracy : 97% (based on 100x100m by cell)

### Navigation

Capable of showing passenger boarding location and destination

- Provides optimal route by reflecting traffic information with real-time streaming method
- Guides to the nearby gas stations, AS agencies, etc.
- Provides links to the AI taxis and hailing services

### Payment

- Accepts various payment methods

- Prepaid/Credit card(IC, RF, MS)
- Cash
- QR
- Mobile payment, etc.

### Hailing

Improves taxi operation rate by providing passengers with on-demand match-making service

- Interfaced with navigation


### Others

Provides drivers with additional information (AS Agencies, gas stations, public toilets, etc.) based on the Open API

## Revolution in TAXI Platform


### T130 (2007)

- Linux
- 2-inch Display
- Centered on payment service(MSR, RF)
- Additional functions provided in separate devices (navigation, hailing, etc.)



### T300 (2015)

- Android
- 5-inch Display
- In addition to payment function, various solutions such as App-Meter, AI Taxi, Hailing are provided
- Builds big data through analysis from single centered system



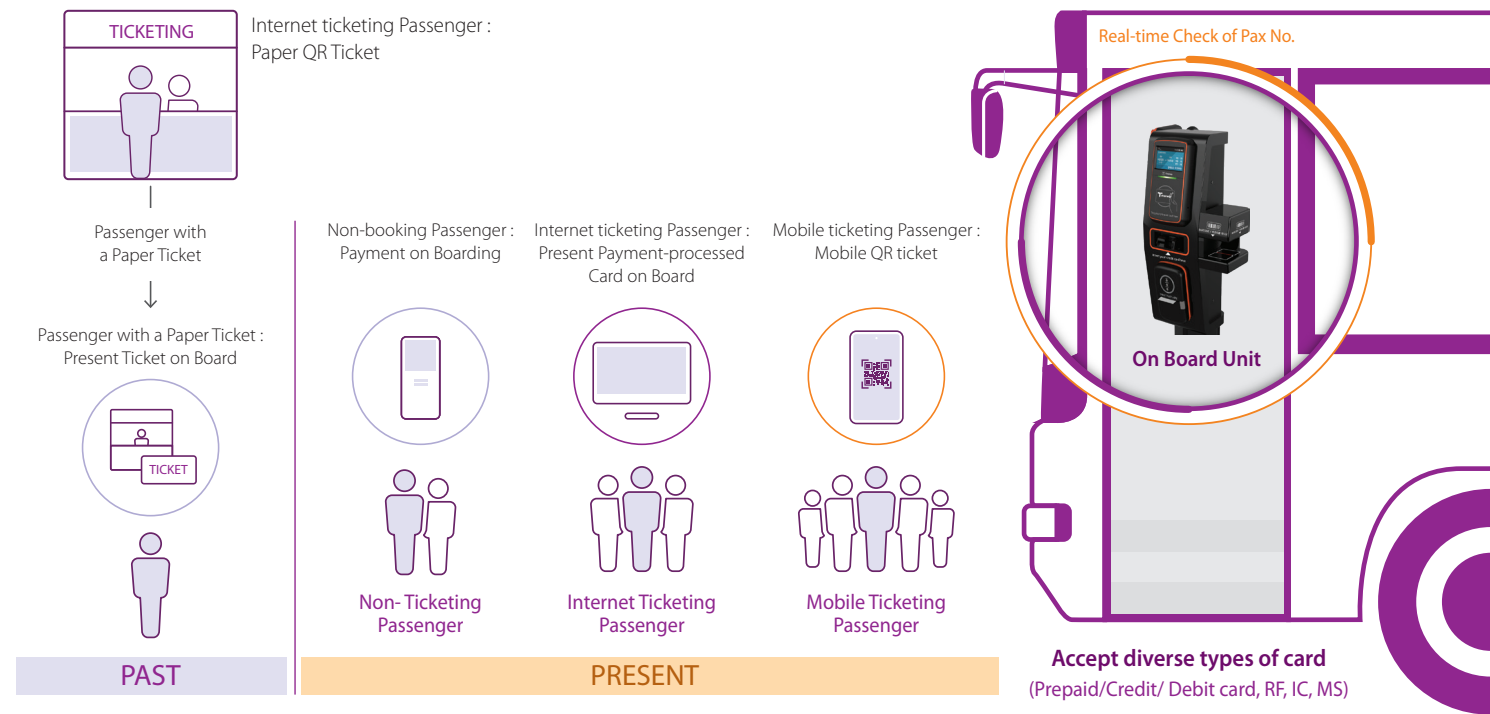
### T600 (2023)

- Android10
- 4-inch Display in addition to T300 feature
- All-in-one terminal including NFC pad
- High specification Octa core
- Embedded type



# Real-time Express Bus Management System

Tmoney Express Bus solution allows passengers to get on buses without visiting ticket booth as they pay for or issue the boarding tickets via On-Board Ticketing system or mobile payment solution.

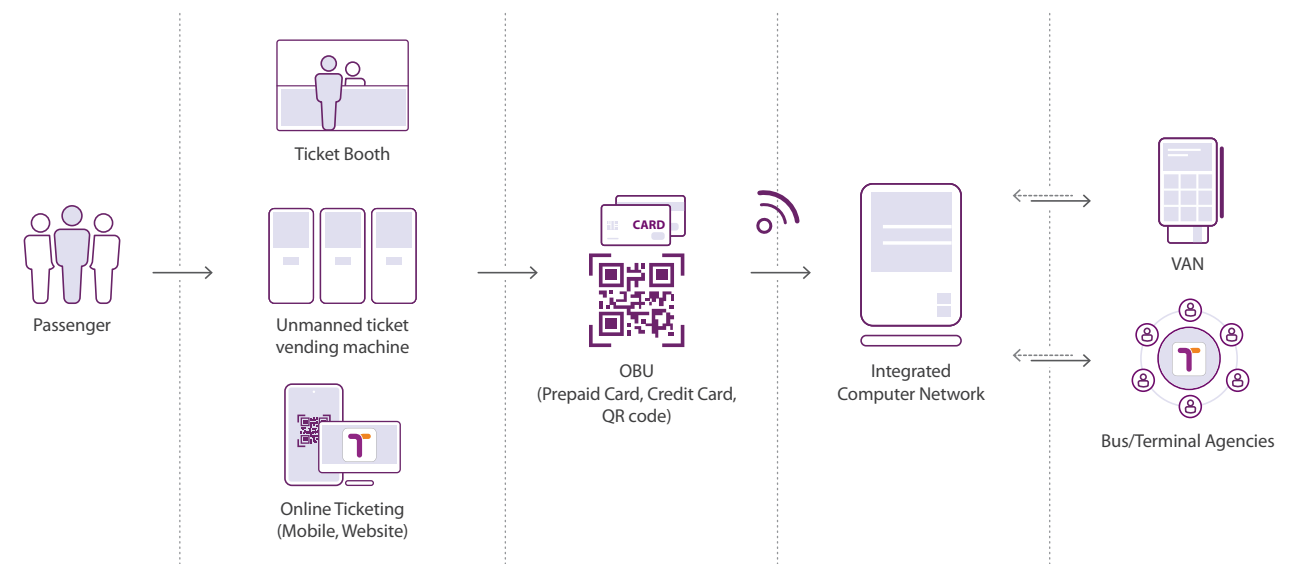


## Customer Convenience

- Increase in customer satisfaction(real- time bus location service via mobile, on-board display and terminal display)
- Easy ticket purchase via mobile app
- Simplify boarding process via self check-in (QR ticketing)
- Decrease in ticket purchase time

## Operator Performance

- Decrease in operational cost
- Effective dispatch scheduling(Realtime monitoring passengers onboard)
- Additional ticketing possible at stop-over bus stops
- Unmanned terminal operation is available
- Number of users increases due to user convenience



## Revolutionary Mobile Ticketing System

<b>Booking / Ticketing</b>	- Search available seats - Booking, change, cancellation - Ticketing(payment)
<b>Arrival information</b>	- View real time arrival time information
<b>Ticket Inspection</b>	- Inspect mobile ticket - Re-scheduled boarding ticket
<b>Personal services</b>	- Bookmark itinerary - Register frequently used card - Search information around terminal

**Mobile Ticketing Rate**

Year	Rate (%)
2015	15.0
2016	30.0
2017	45.0
2018	60.0
2019(1Q)	65.0

## Revolutionary On Board Unit Ticketing System

With the high-end OBU, passengers simply buy ticket as they board the bus without booking in advance.

Depart 13:00 Seoul  
15:00 SeJong 140Km  
Arrive 18:00 Busan  
10:22:24 Dis. 290Km  
<In-vehicle display>

Prepaid, Postpaid Card  
Simple payment through RF tag  
- Prepaid card  
- Postpaid credit/debit cards

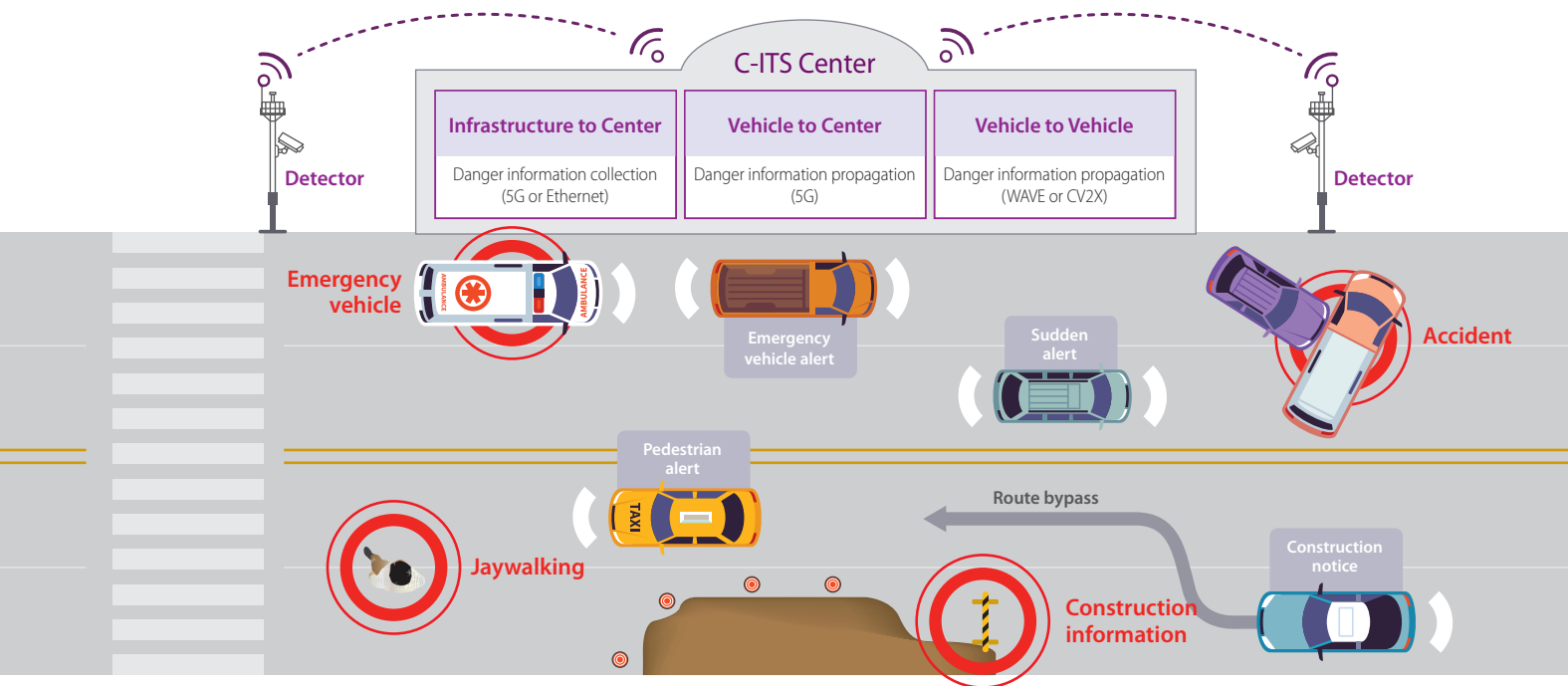
Receipt Printer  
Issues a receipt

QR Reader  
Checks tickets by reading QR  
- Paper QR  
- Mobile QR



# The World's First C-ITS All-In-One Platform Proven In 5G Environments

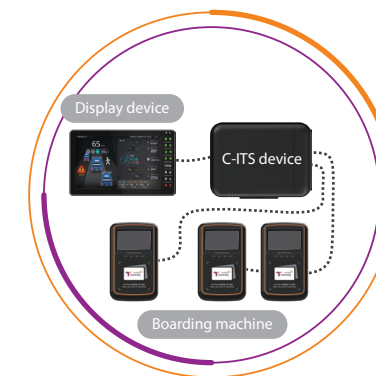
C-ITS refers to an intelligent transportation system that maximizes the efficiency of traffic facilities by providing the drivers with accident danger information such as nearby traffic situation, sudden stop, falling objects, etc. in real time through collection, management and provision of traffic information. While the existing ITS system was a system centered on traffic management that collected and unilaterally provided the information manipulated by the center, C-ITS is based on advanced communication technology, assisting drivers through real-time bidirectional information exchange between vehicle and vehicle (V2V), vehicle and infrastructure(V2I), vehicle and center(V2C)



## C-ITS of MegaCity Seoul

Seoul is promoting the C-ITS project, which implements 5G, WAVE and CV2X communication methods simultaneously for buses and taxis for the first time in the world. Tmoney's on-board terminal for C-ITS has been installed in more than 1,500 buses, serving as an all-in-one platform for Seoul C-ITS project.

### Device configuration for project



### Provided Services

#### InVehicle (3)

- Electronic reservation support
- Bus stop bell pushed
- Automatic notification of destination

#### Traffic management (5)

- Signal alert and warning
- Location-based vehicle data collection
- Location-based traffic information provision
- CCTV connection for incidents

#### Safe operation (8)

- Support for vehicle collision prevention
- Lane departure warning
- Hazard zone warning alert
- Support for intersection crash prevention
- Jaywalking pedestrians approach warning
- Support for emergency vehicle pass-through
- Risk situation report
- Provision of tunnel accident information

#### Bus management (8)

- Detecting overtaking vehicles
- Support for following driving of cooperation vehicle
- Public transportation management support
- Station platform congestion alert
- Front bus rear view guidance
- Station congestion information
- Information on parking area at the stop
- Drowsy driving alert service

#### Road management (4)

- Pothole warning
- Construction Notice
- Weather information provision
- Smart toll collection

## Key Features

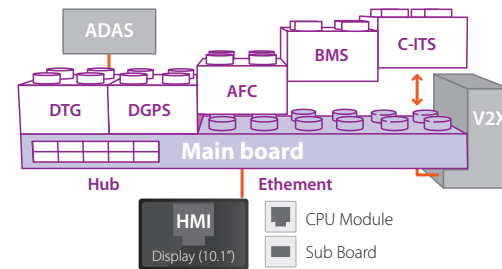
### The world's first all-in-one solution



The world's first all-in-one terminal that integrates C-ITS function with AFC + BMS

- Its reliability is verified in 5G environment

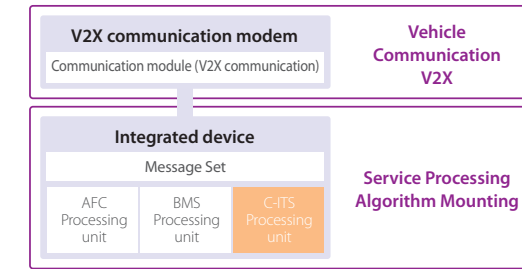
### Optimization through modularized hardware



H/W modular configuration makes it possible to manufacture terminals with various configurations

- A single "CPU block" can operate independently and configure various types of products depending on its purpose.

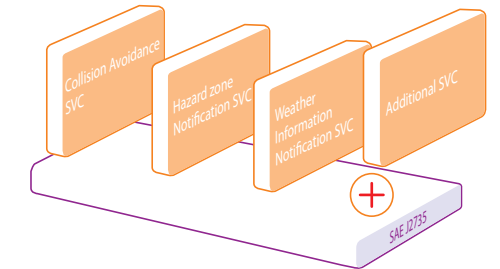
### Flexibly copes with various communication methods



With the V2X service algorithm on board, it can be flexibly applied to various communication methods.

- It is designed to be easy to change the communication methods of WAVE, C-V2X, LTE and 5G only by changing the modem.

### Easy to expand specialized service

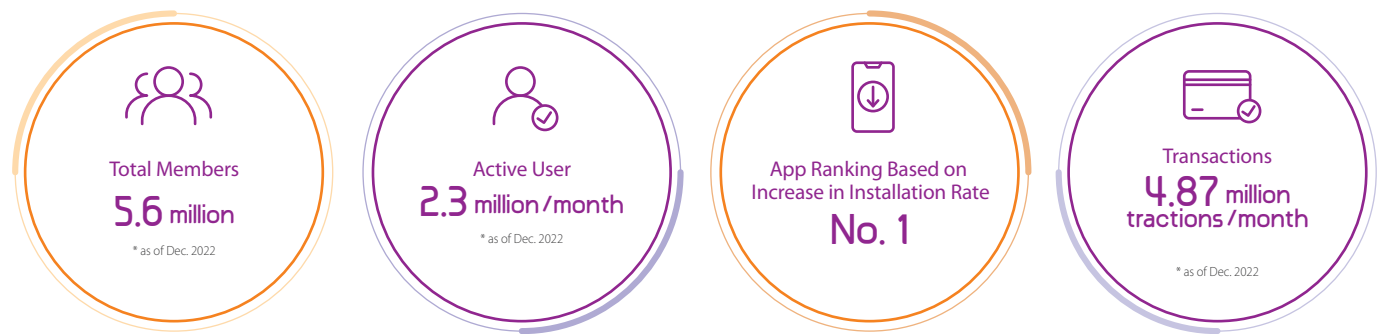
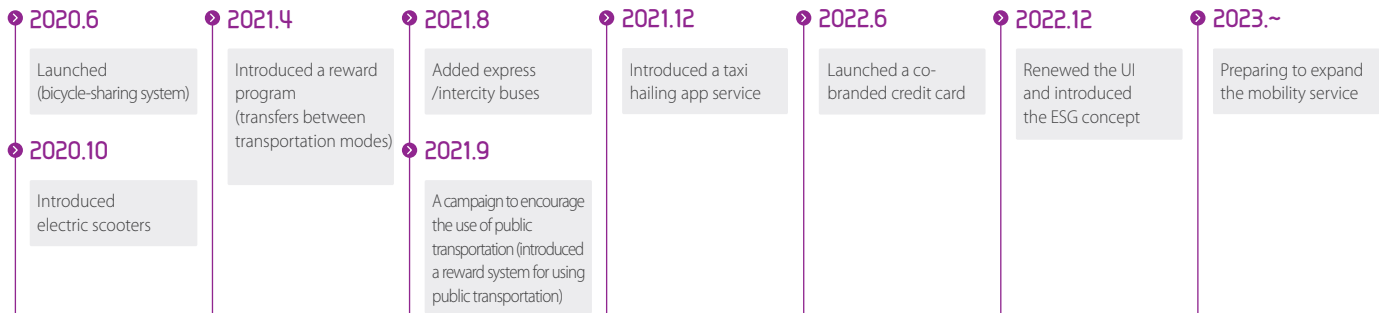


With messages based on international standards used, specialized algorithms can be developed

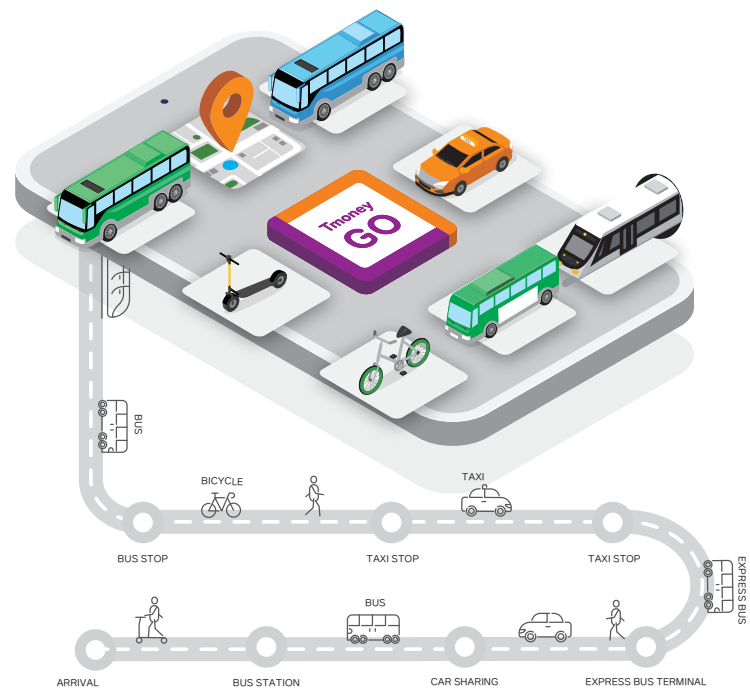
- Designed so that services can be easily added with the development of algorithm based on SAE-J2735 message set, which is a de-facto standard, and the standard protocol design between C-V2X modems.

# 4 in 1, Nationwide Multi-modal Transport App Service

By offering a single app to use various modes of transportation, from micromobility to metrorailways, Tmoney provides mobility as a service (MaaS) in an integrated manner for the best way to travel, while maximizing convenience for users.



## Key Features



### One App Multimodal

Instead of having to download multiple apps to use various modes of transportation, you can experience mobility services by using the Tmoney GO app for improved convenience.

### Optimal Route Suggestion

It suggests the optimal route considering various means of transportation including public transportation, and directs the users to the relevant booking/taxi hailing/rental services for the route.

### Rewards Program

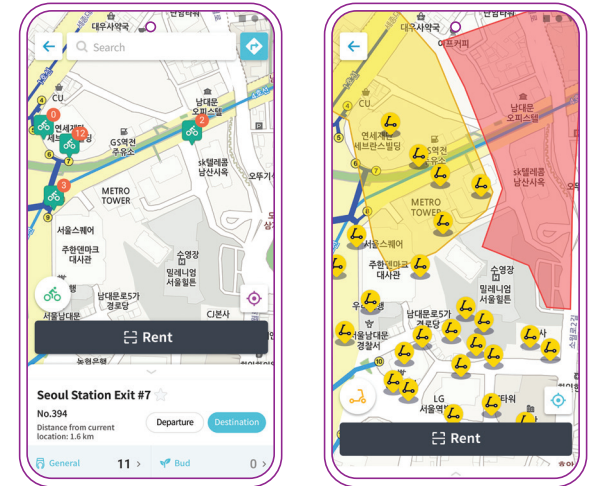
Users can earn mileage points by using public transportation or transferring to other modes of transportation (express/intercity bus, bicycle, electric scooter, etc.) and redeem the points like cash on the app.

### Diverse Contents & ESG Campaigns

Users are provided with personalized contents based on their mileage points and transportation usage records. ESG campaigns are also promoted based on usage history (distance traveled).

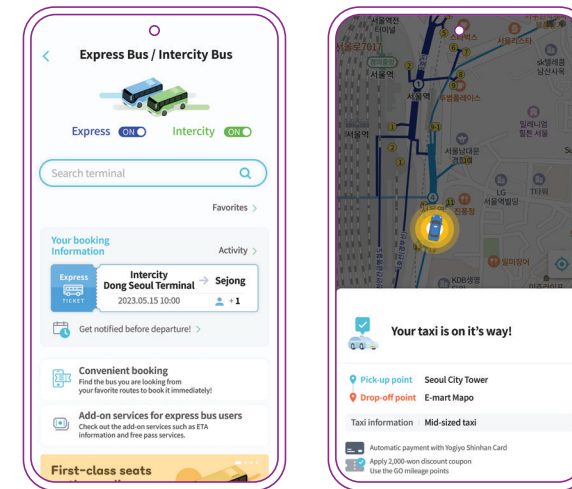
## Seoul Public Bike Share Service

Seoul City's public bike share service, Ttareungi, can be used on Tmoney GO. The time remaining for the rental can also be checked on the app.



## SsingSsing (Electric Scooter) Service

Users can rent and return SsingSsing anywhere across the country. Users are able to redeem a discount coupon or mileage points earned upon purchasing.



## Taxi Hailing Service

Tmoney onda, a rejection-free taxi hailing service, is also available on Tmoney GO. Users can request a cab after selecting a coupon, mileage points, or automatic payment method registered and save frequently used routes/credit cards.

## Express /Intercity Bus Ticketing Service

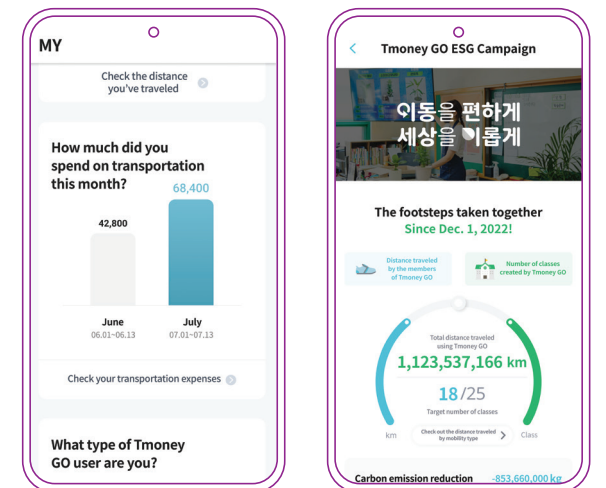
Look up bus routes and book bus tickets for express buses and intercity buses. Add multiple bus tickets to your shopping cart, pay at once, and present the QR code when boarding the bus.

## Rewards

Users earn mileage points just by registering a transportation card used everyday. Earn extra mileage points for using mobility services through special events and promotions.

## Personalized Content & ESG Campaigns

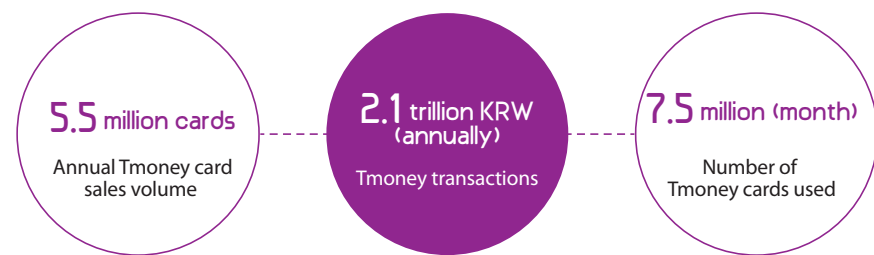
Providing benefits and promoting ESG campaigns based on users' usage history.



Payment Service

Tmoney Card & Partnership

Tmoney is Korea's leading e-finance company, issuing Tmoney cards as a means of prepaid electronic payment. It is involved in various card-related businesses such as sales and partnerships, recruitment of merchant stores and service partnerships.



Basic cards



Basic Tmoney card



Character cards



Cards for foreign tourists



Special edition cards

Co-branded cards



Co-branded with financial institutions



Co-branded with distributors/retailers

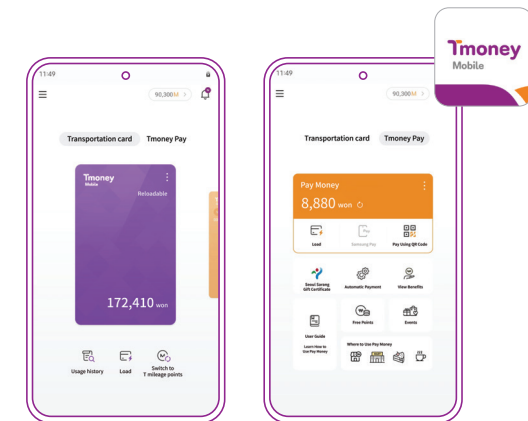
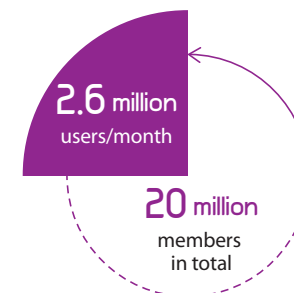
Tmoney accepted by



Mobile Tmoney App Service

Pay conveniently without a card using mobile

Use Mobile Tmoney instead of a plate card Korea's leading mobile payment service using the NFC function of the mobile phone allows users to make payments in a fast and easy way.



Wide Merchants

- Transportation: Public transportation (bus, subway) nationwide, taxis, express/intercity buses, trains
- Retailers: Convenience stores, cafes, bakeries, and online retailers that are partners with Tmoney
- Retailers accepting UnionPay overseas (QR code)

Convenient Payment

- Payment without running the app or turning on the screen (NFC)
- Payment at any retailers accepting credit cards (when using Samsung Pay)

Special Benefits

- Tmoney Pay&GO Card: 30% discount on public transportation and 20% discount on express/intercity buses, taxis, Ttareungi, Xingxing, and income tax deductions possible!
- No service charges for loading the card, protection offered for the remaining balance when the phone is reported stolen or lost,
- Mobile membership (CU): Can enjoy both the CU membership service and Tmoney benefits at Korea's leading convenience store
- Personalized benefits sent via push notifications based on location-based marketing (TPO)

KOREA TOUR CARD Tmoney

Korea Tour Card Tmoney is a smartcard mobile application based on HCE(Host Card Emulation) solution to maximize foreigners' seamless and convenient travel experiences. In addition to the basic Tmoney function(payment on bus, subway, taxi, airport coach, F&B stores nationwide), it also provides exclusive benefits such as duty-free shop discount, free admission to tourists attractions for foreign tourists.



Solution Features

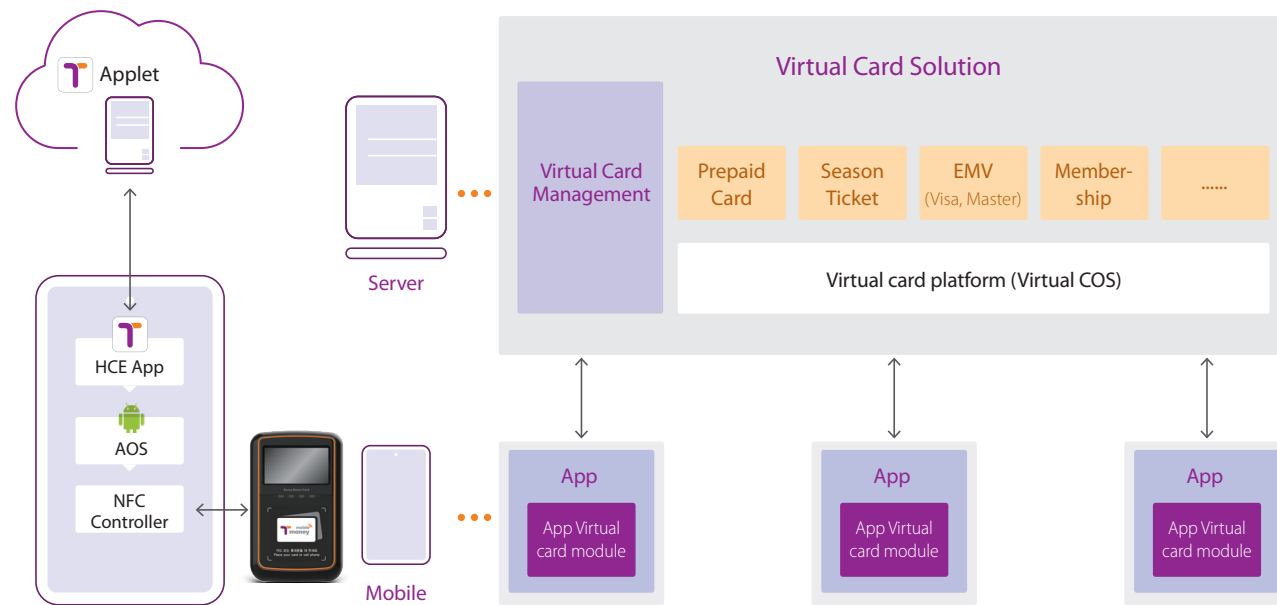
- Tmoney payment service is available only by installing an app
- Overcomes the inability to apply Mobile smartcard due to restriction of foreign USIM
- Supports mobile devices with Android OS 5.0.1 or later(with NFC function)
- Implements real-time lost & theft service

Service Key Features

- Account based service
- NFC Payment and in-app Top up/Refund
- Exclusive benefits(about 180 brands) for foreign tourist

## Cloud SE-based Payment Solution

The virtual card solution is an open-type, cloud-based mobile payment platform where service providers offer customers with flexible and quick services by eliminating complex card management procedures and focusing on implementation of business logic.



### Key Features

#### Account Based Ticketing

- Server-based real-time card payment control (loss and theft, time/frequency control, etc.)
- Established payment framework that covers various payment methods such as mobile user equipment and wearable devices as well as On/Off-line and In-App payment platforms

#### Secured Payment

- Defends against vulnerability of mobile OS and app by applying White Box Cryptography (WBC)
- Operates real-time monitoring system for real-time detection of abnormal transactions and response to loss and theft

#### One App Multi Card

- Implements various card products such as prepaid card, season ticket and membership in one single app (wallet): One App Multi Card
- Interoperable among overseas countries/cities

#### Minimized dependency

- Capable of supporting various payment interfaces (NFC, barcode, QR code, Bluetooth, etc.)
- Available for all devices supporting HCE of Android OS 5.0 or higher

