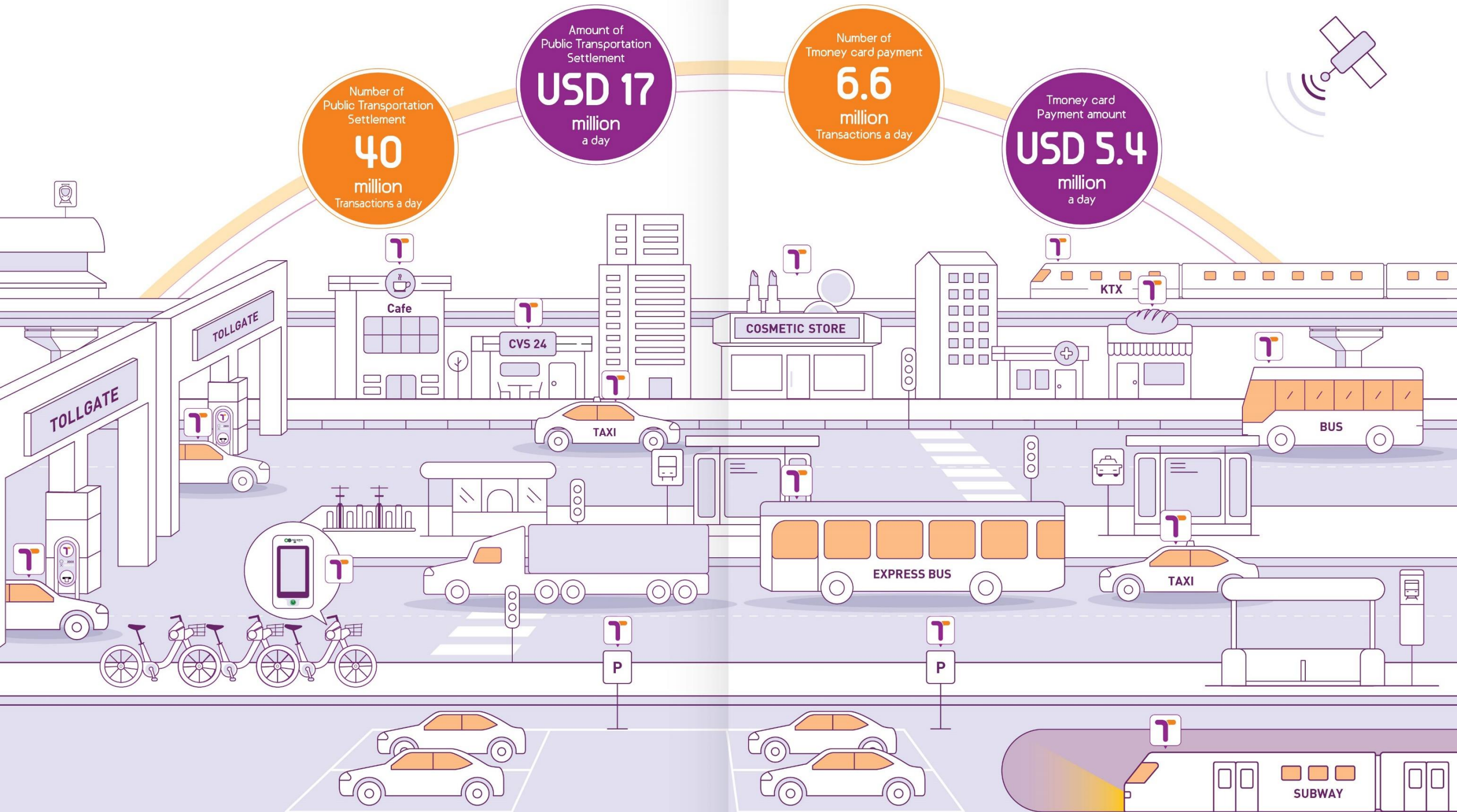




Tmoney at a Glance

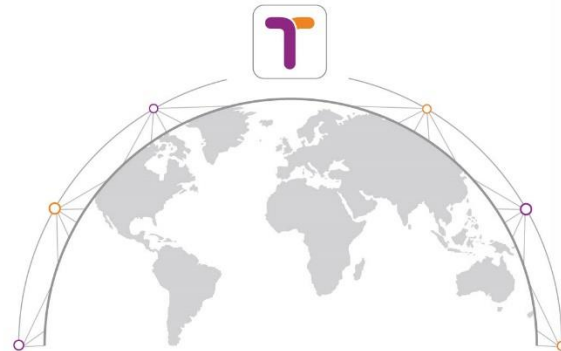


World Class Smart Mobility & Payment Service Company

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 past 15 years, 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.



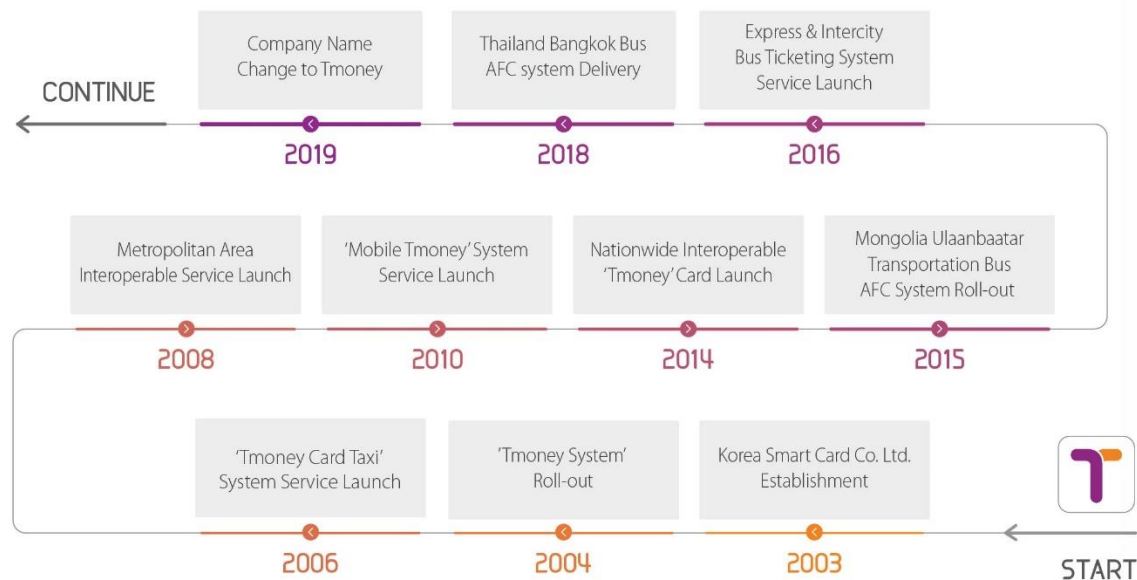
Mission

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

Vison

- 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.

| | | | | |
|-----------------------|--------------------------------------|-----------|--------------------------------|--------------------------|
| Card | Post-paid Card including Credit Card | | Pre-paid Card including Tmoney | |
| Public Transportation | Seoul Subway | Seoul Bus | Incheon Bus | Gyeonggi-do Province Bus |
| Clearing | Tmoney | | | |

Colombia (2012)

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

New Zealand (2007–Present)

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

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)

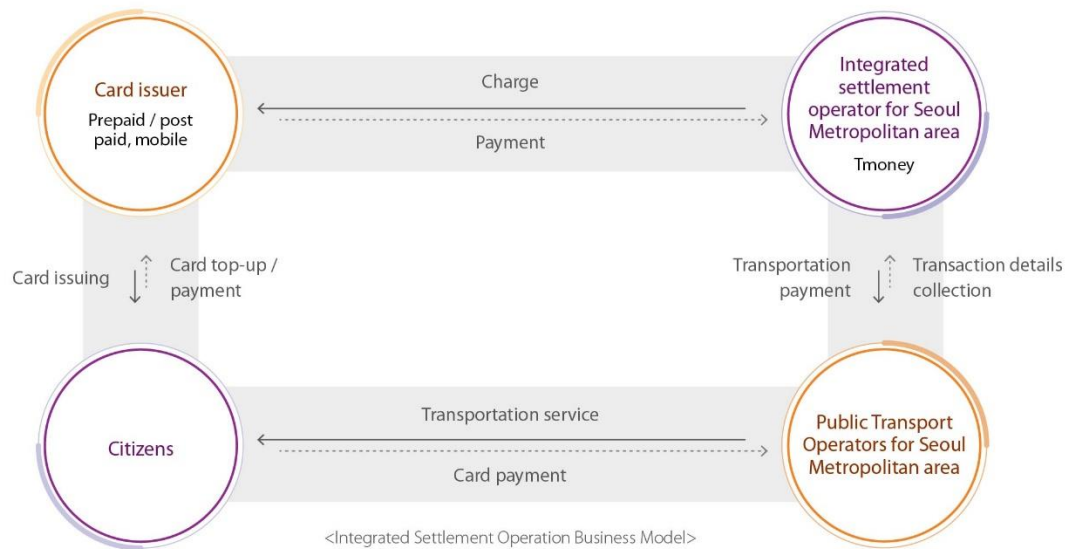
Malaysia

- 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

World's No.1 Integrated Settlement Operator

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



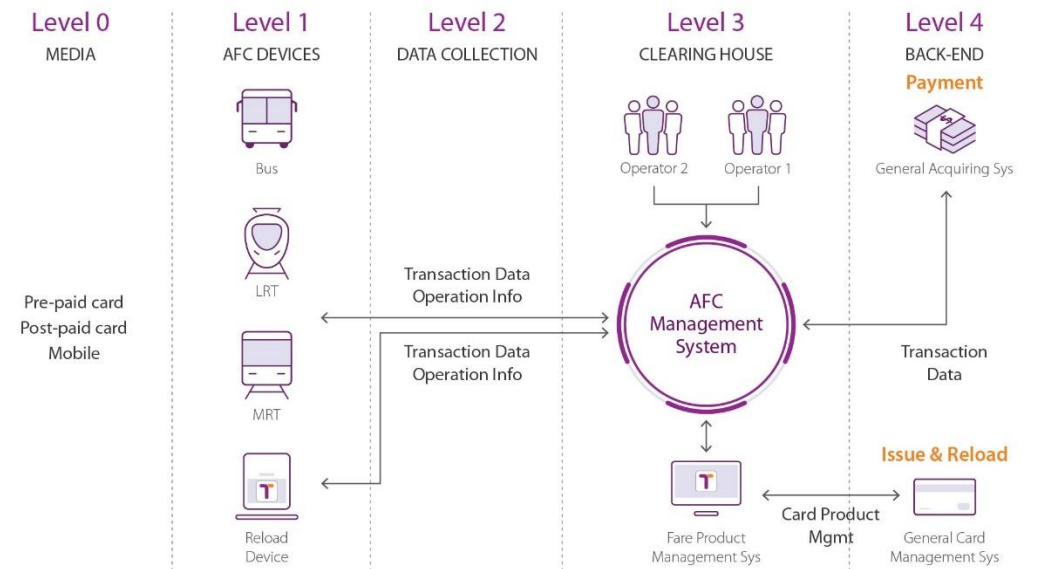
Korea Nationwide Interoperable Card

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.

Ministry of Land, Infrastructure and Transport certified
"Korea Nationwide Interoperable Card"
 국토교통부 인증
전국호환
 ONE Card All Pass
 Tmoney logo and a physical card image.

Automated Fare Collection

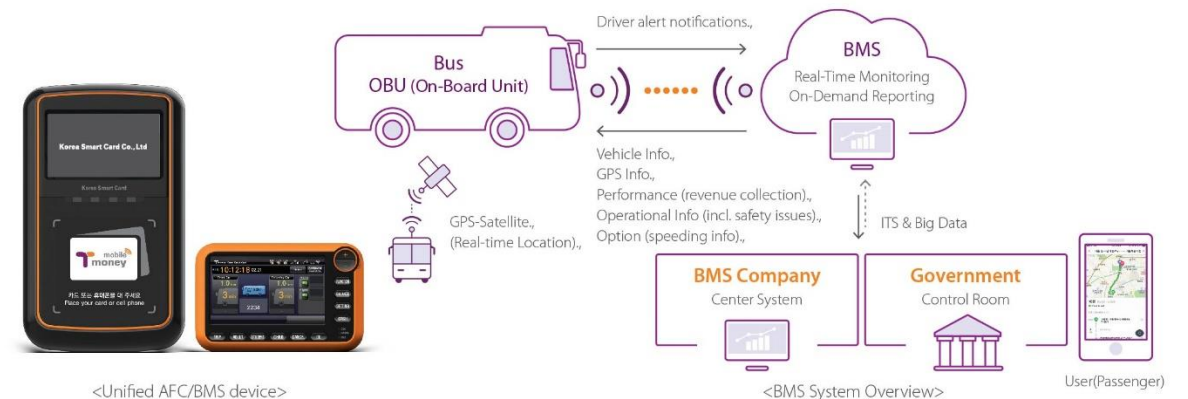
Tmoney AFC is easily deployable system which enables you to integrate turn-key AFC solution into your public transport system; a system designed to provide smartcard and mobile device (NFC) based AFC, real-time BMS, and Remote Device Control services.



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.



<Unified AFC/BMS device>

<BMS System Overview>

Multi-solutions 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

Total fare 6.30\$

- 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)

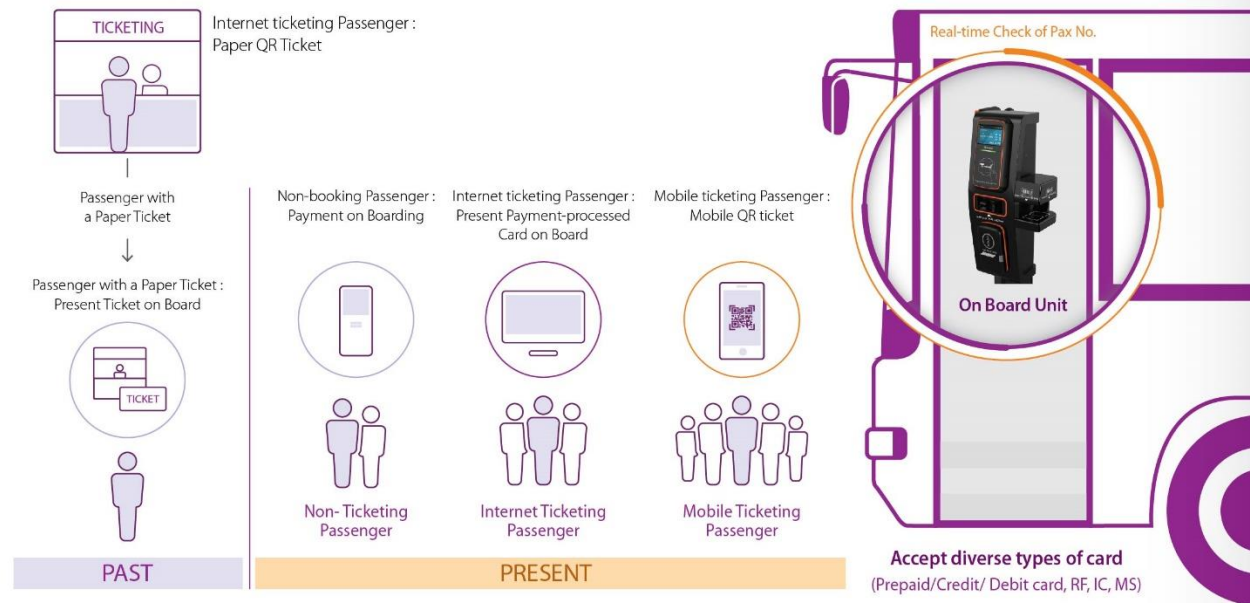
- Android
- 5-inch Display
- In addition to payment function, various solutions such as App-Meter, AI Taxi, Hailing are provided
- Builds big data through analysis from single centered system

T400 (2019)

- Android (Oreo)
- 8-inch Display(Service screen division)
- Big Data, AI-based Real Time Service extension
- High specification Quad core 2GB of RAM 16 GB of eMMC
- Supports C-ITS Solution

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.

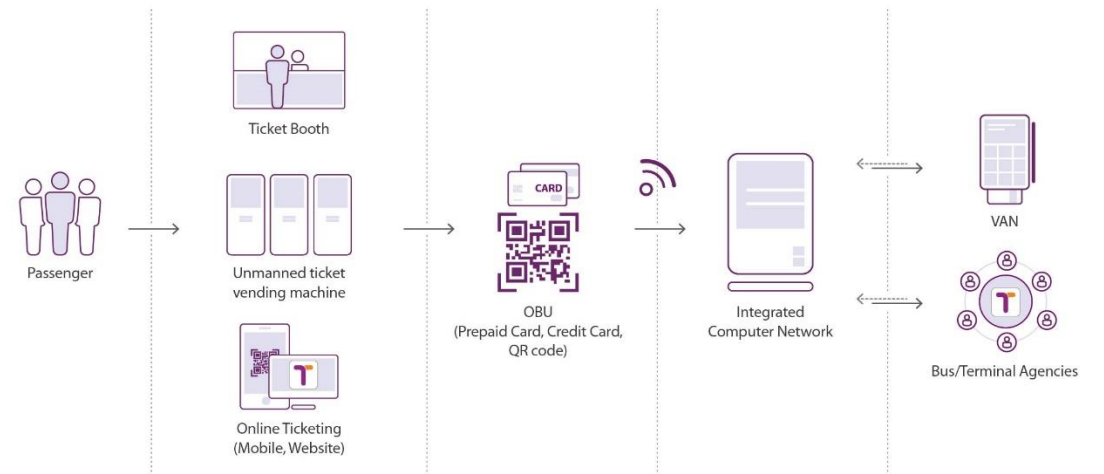


Customer Convenience

- 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

| | |
|----------------------------|---|
| Booking / Ticketing | - Search available seats - Booking, change, cancellation - Ticketing(payment) |
| Arrival information | - View real time arrival time information |
| Ticket Inspection | - Inspect mobile ticket - Re-scheduled boarding ticket |
| Personal services | - 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.

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

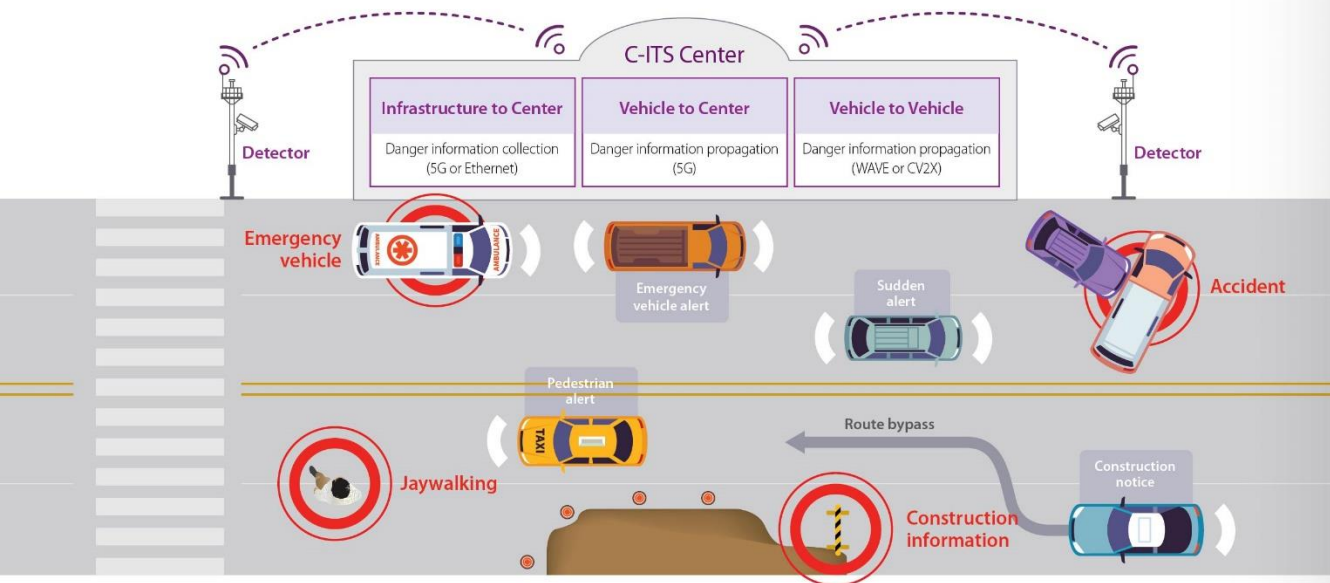
Receipt Printer
Issues a receipt

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

Displays departure and arrival time/location, route stop/arrival time, total traveling distance, remaining distance and real-time seating status etc.

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

As of 2019, 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 will be installed in the second half of 2019 and will serve as an all-in-one platform for Seoul C-ITS project.

Device configuration for project



Provided Services

| | |
|--|---|
| Safe operation (8) <ol style="list-style-type: none"> 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) <ol style="list-style-type: none"> 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 |
| InVehicle (3) <ol style="list-style-type: none"> Electronic reservation support Bus stop bell pushed Automatic notification of destination | Traffic management (5) <ol style="list-style-type: none"> Signal alert and warning Location-based vehicle data collection Location-based traffic information provision CCTV connection for incidents |
| | Road management (4) <ol style="list-style-type: none"> Pothole warning Construction Notice Weather information provision Smart toll collection |

Key Features

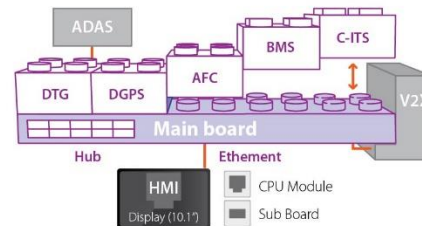
The world's first all-in-one solution



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

- Its reliability is verified in 5G environment

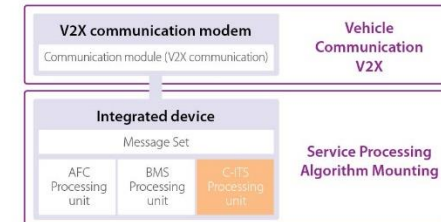
Optimization through modularized hardware



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.

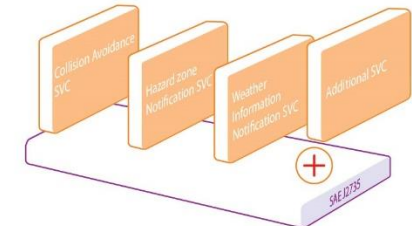
Flexibly copes with various communication methods



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

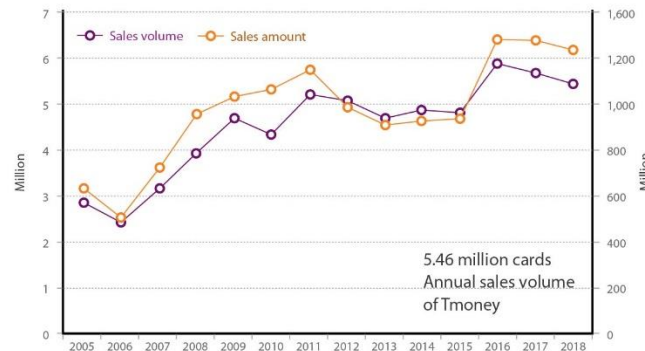


With messages based on international standards used, specialized algorithms can be developed

- 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.

The World's Leading Prepaid Card And Mobile Payment Provider

Tmoney is Korea's leading prepaid card issuer, issuing 'Tmoney', an electronic Prepaid card and is engaged in various card related businesses including sales and affiliates, recruitment of franchises using it, and service partnership.

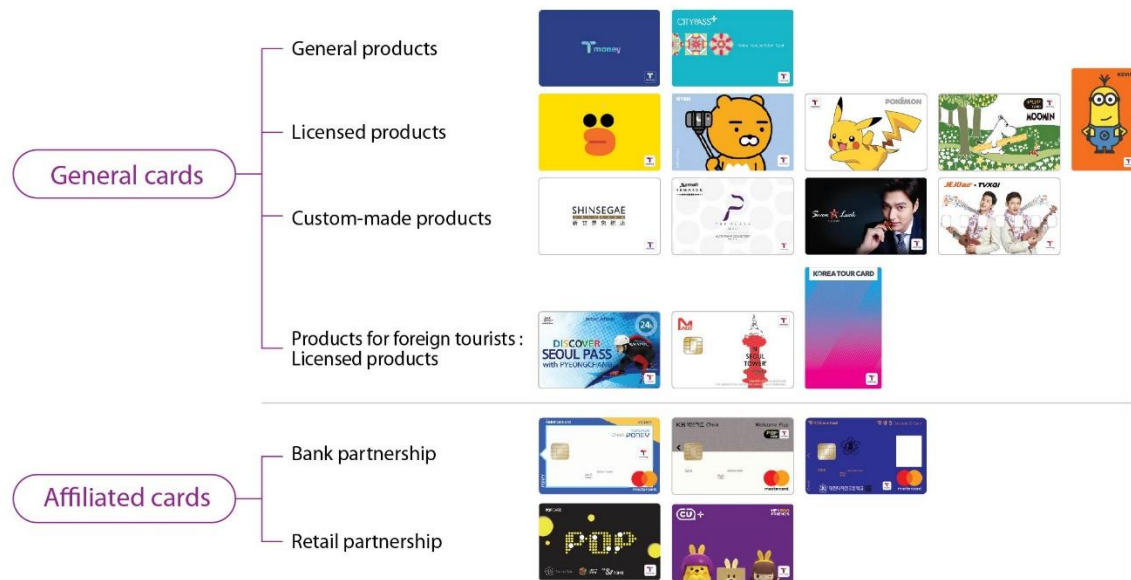


USD1.96 billion a year
Amount of Tmoney payment

2.4 billion transactions a year
Number of Tmoney transactions

8.7 million cards a month
Number of cards used

81.3%
Market Share of Prepaid Card Payment Amount



Where to use Tmoney

| | | | |
|--|--|--|---|
| Transportation Express Bus, Bus, Subway, KTX, TAXI | Coffee / Ice cream Starbucks, Baskin Robbins, Gong cha, JUICY, Angel in us Coffee, 백다방, TIAMO, Caffe PASCUCCI, Jamba Juice | Convenience store GS25, CU, 7-ELEVEN, emart24, MINI STOP, 365 PLUS, StoryWay | Super market/ Retails Home plus, lalavla, gs Supermarket, Home plus express |
| Bakery PARIS BAGUETTE, DUNKIN' DONUTS, 빛은 | Fast Food McDonald's, LOTTERIA | Others Public phone / Subway unattended storage / Public parking lot | |

Mobile Tmoney

Tmoney is proactively pioneering the mobile payment market with 'Tmoney Pay Touch', which is the world's first commercialized product based on SIM card; 'Tmoney Pay' and 'KOREA TOUR Tmoney', the cloud products based on HCE; and 'Tmoney BizPay', which meets business demand.

'Tmoney Pay' and Marketing Platform

This service provides all the functions of Tmoney through mobile apps by NFC or QR code. It is also available to be used as a marketing tool.

| | | | |
|---|---|---|--|
| 11.4 million users Mobile membership | Active user totaling to 1.45 million | USD 529 million Annual usage amount | 48 million Cumulative download |
|---|---|---|--|

SIM-based service standards

- Tmoney Slide**: It offers a variety of contents and advertisements on the user's lock screens, as well as T-mileage benefits as rewards for clicks.
- Pop-up Push**: It provides effective PUSH service that enables targeted marketing based on membership information such as the desired time, sex/age, etc. on a B2B basis.
- Transportation Boarding and Alighting Notification Push**: It provides TPO (Time/Place/Occasion) push marketing on the basis of boarding and alighting information of customers using public transportation nationwide.

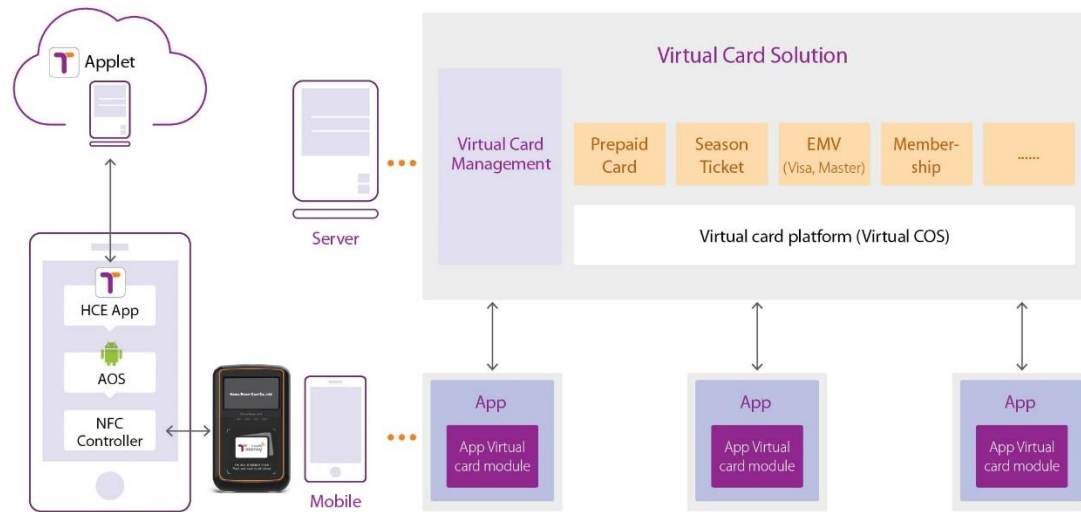
'Tmoney BizPay' Service

This service enables the employees of the companies/organizations to conveniently pay with mobile apps when using the transportation means for business purpose. It gives the administrator a separate authority, effectively limiting its use other than business purposes through inquiry of starting point and destination, use history, etc.

- Increases employee convenience**: It is immediately available upon app installation and has no need to separately request for taxi fare.
- Simplifies business taxi operations**: It enables each department to manage the usage history through the function of assigning manager by department, and does not need to process receipts manually. It also enables deferred payment for the usage fare.
- Reduces business costs**: It achieves cost saving and transparency for companies by setting service time and location that employees can use as well as monitoring usage history.

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

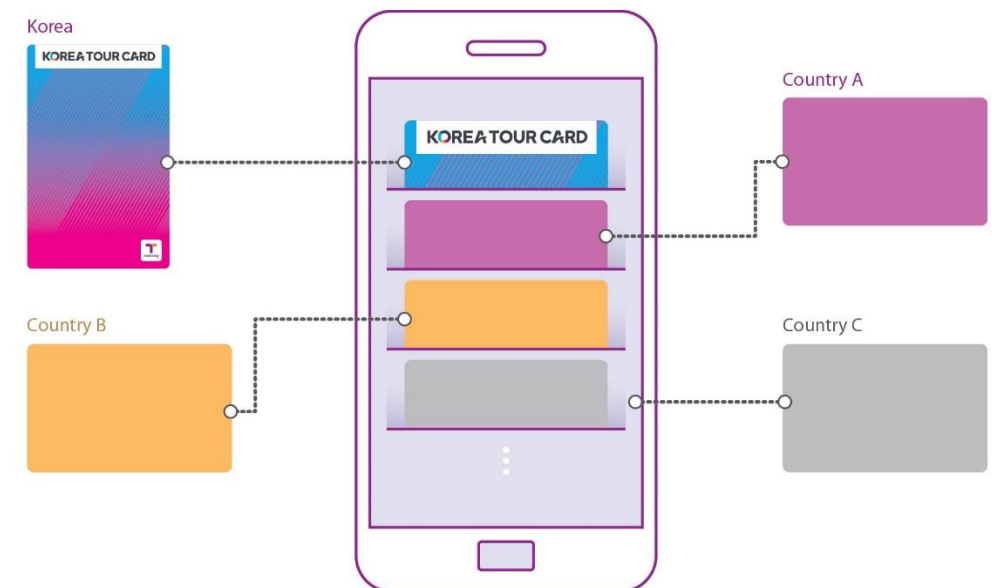
- Implements various card products such as prepaid card, season ticket and membership in one single app (wallet): One App Multi Card
- Interoperable among overseas countries/cities

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

Benefit of One App Multi Card service

It is a mobile smartcard wallet service that provides users with a set of an interoperable smartcard from each country/city which is cloud-based and issued from a single application. With this single application, you can freely travel multi-countries/cities by adding your smartcard in the app at the beginning.



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

