

Smart Transportation:

E-ticketing in the Public Urban Transportation



01 LG Corp. Overview

Founded



1947

Headquarter



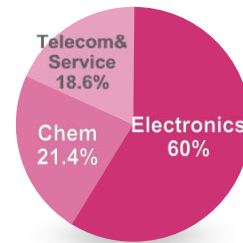
Seoul, Korea

Chairman & CEO



Bon Moo Koo

Total Sales



USD 134 billion

Employees

Domestic 131,000

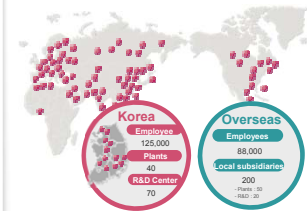


Overseas 95,000



220,000+

Global Locations



270 Overseas Subsidiaries

01 LG Corp. Business Area



12 Electronics

 **LG Electronics**

 **LG Display**

 **LG Innotek**



14 Chemicals

 **LG Chem**

 **LG Hausys**

 **LG Household & Health Care**



31 Communication & Services

 **LG CNS**

 **LG U+**

 **LG International**

02 LG CNS Overview

Founded



1987

CEO



Dae Hoon Kim

Employees



10,000+

Annual Sales



USD
3 billion +

Global Locations



China, Japan, U.S.A,
Netherlands, India,
Indonesia, Malaysia, Brazil,
Saudi, UAE, Colombia

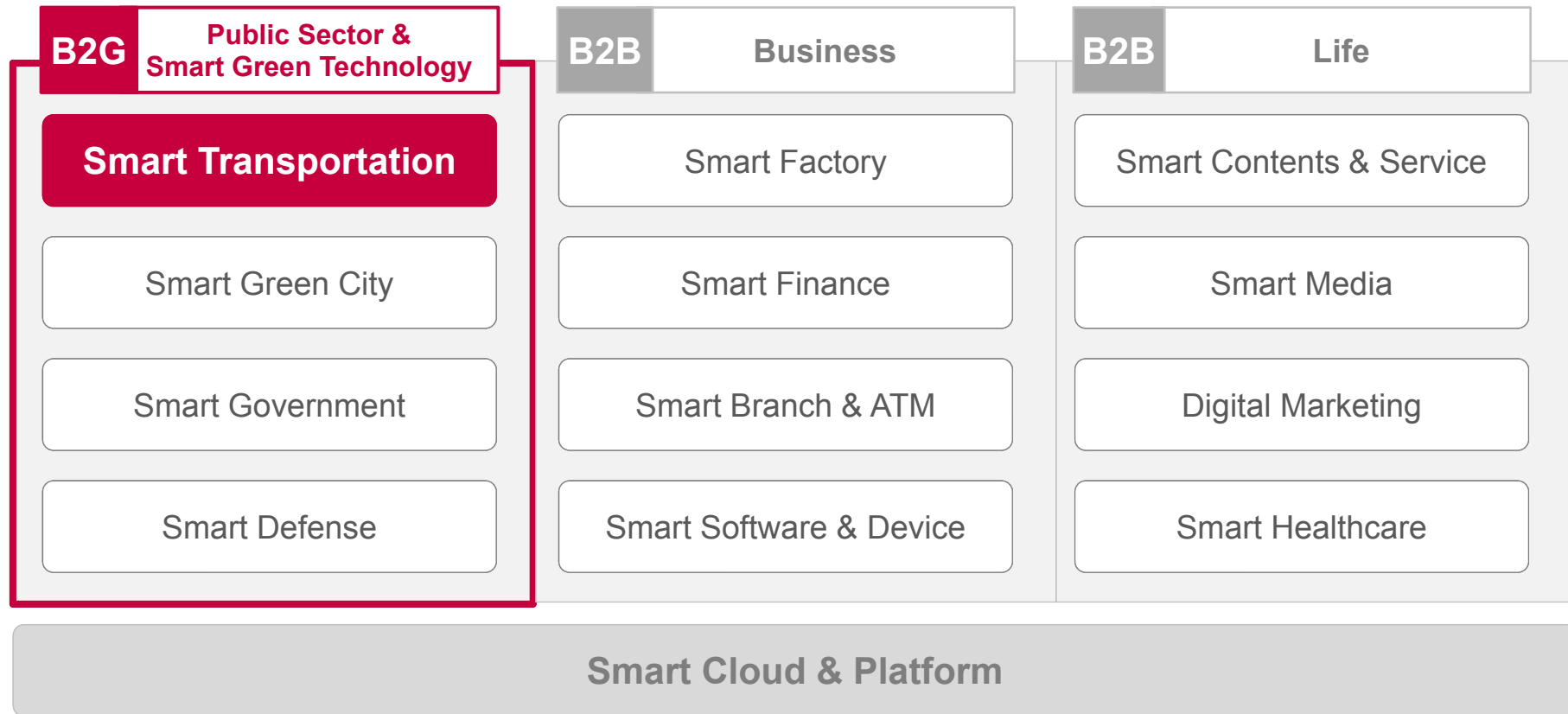
Subsidiaries

- LG N-Sys
- Ucess Partners
- BnE
- Korea Elecom
- SBI-LG systems
- Ever On

⋮



02 LG CNS: Service Offering



02 LG CNS: Certifications

We follow **Global Standards**
& possess **Certified Technology**



Quality Management

ISO 9001

Environmental Management

ISO 14001

IT Service Management

ISO 20000

CMMI

Level 5

IT Security

ISO/IEC 27001

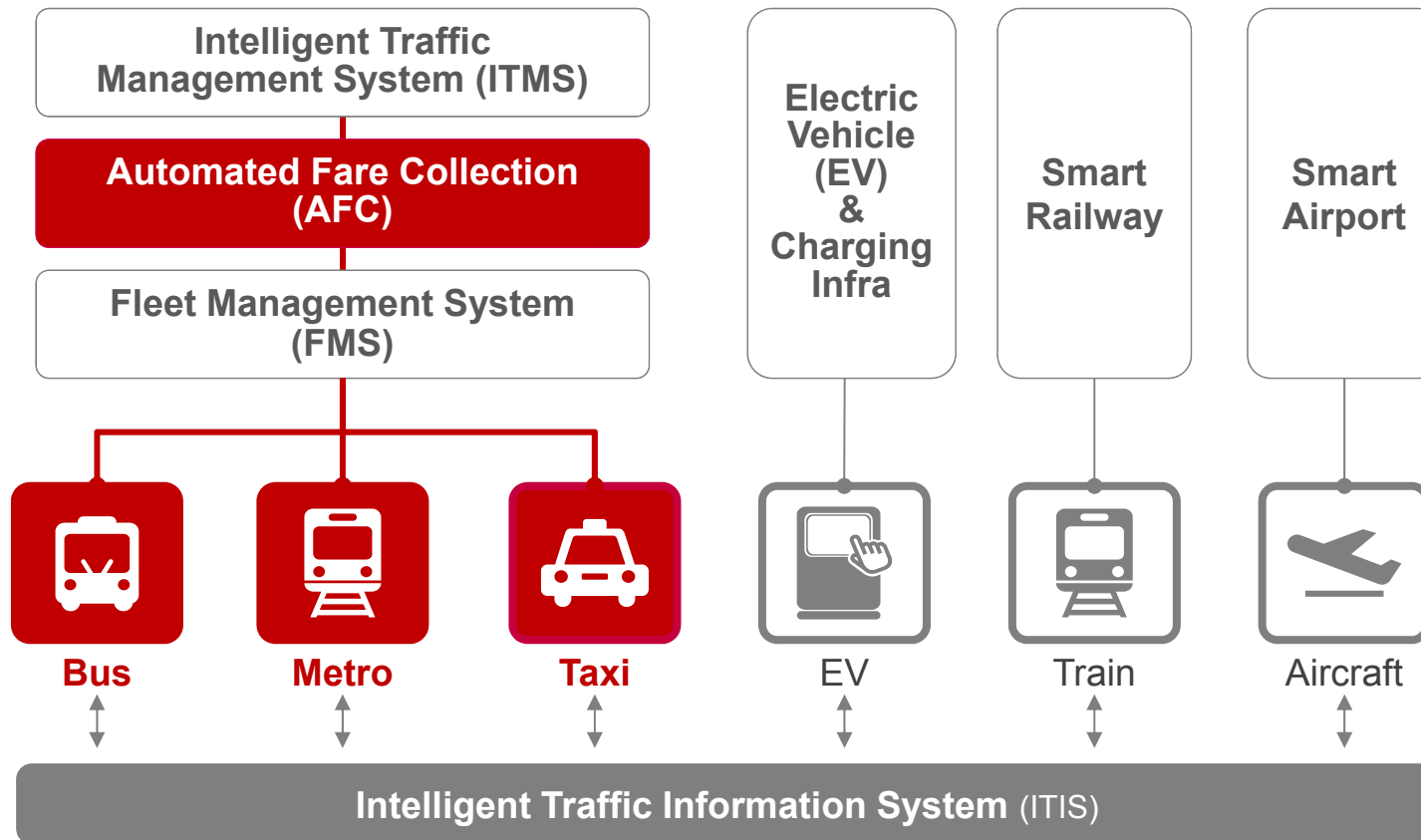
Health & Safety Management

OHSAS 18001

03 Smart Transportation

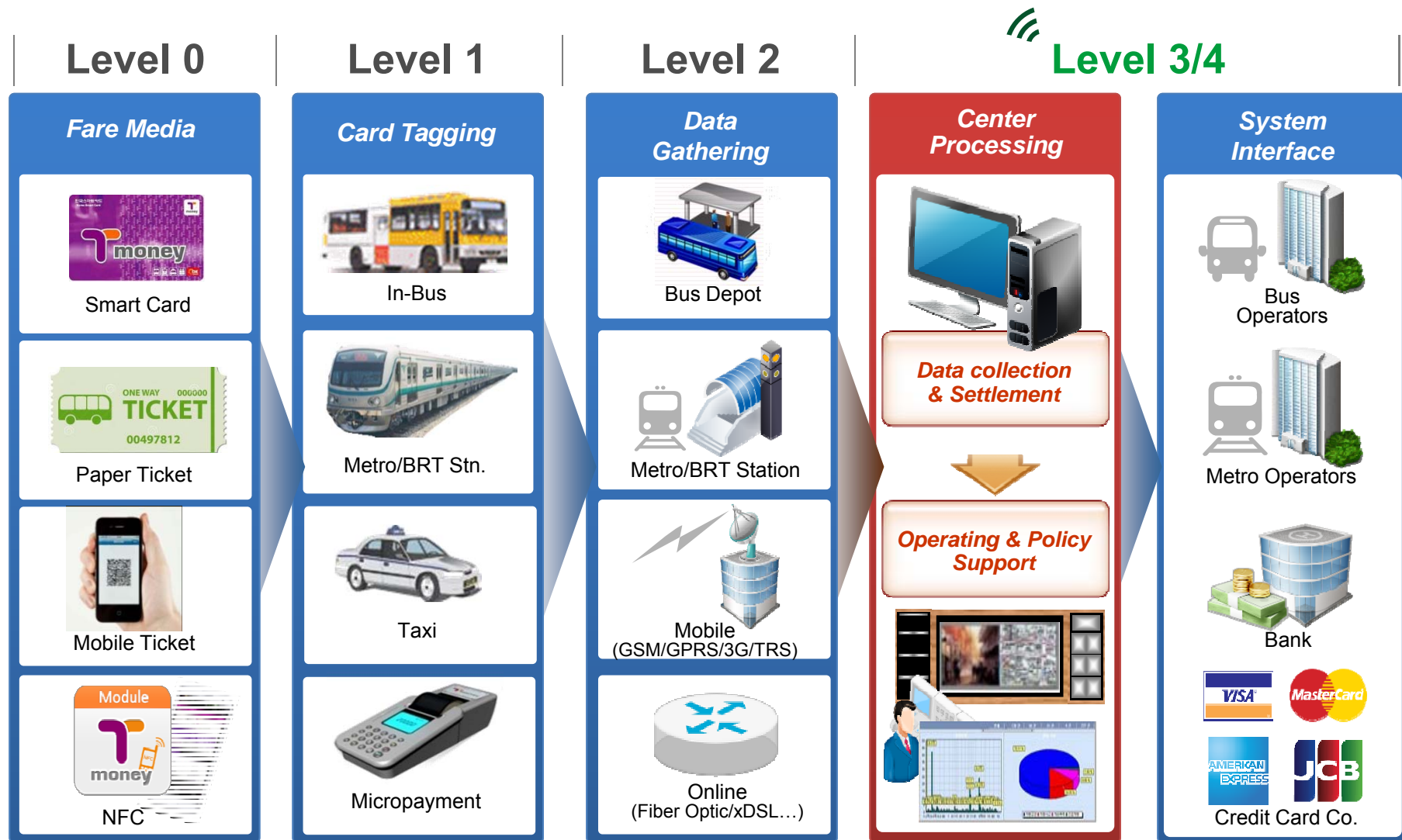
LG CNS provides solutions and services covering the full range of transportation systems including urban transport (bus, underground, taxi, etc.), railway, airport, EV (electric vehicle and car sharing)

Solutions

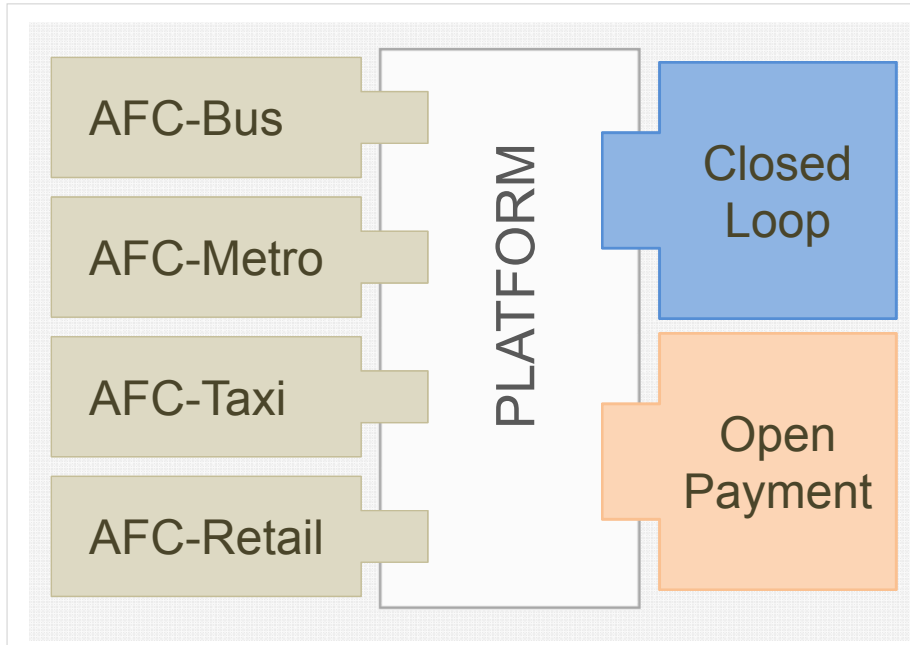


04 LG CNS AFC solution

a. AFC Business Flow



Fully Functioned Package



AFC for Megacity

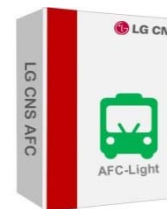
- City-wide Integrated Fare Collection
- Population of 500Mil. or more
- Multi-Mode
- 3 or 4-tier Architecture
- Customizable Package



Sub-packages

- Sub-packages according to Transit Mode
e.g. **AFC-Bus, AFC-Metro, AFC-Taxi,...**
- Sub-packages according to Payment Scheme
e.g. **AFC-Closed Loop, AFC-Open Payment**

Compact Package



AFC-Compact

- Solution for a small city or a transit operator
- Under 2,000 Buses
- Simple 2 or 3-tier Architecture
- Pre-defined functions & Min. modification

04 LG CNS AFC solution

c. Multi-modal & Multi-functional

Smartcard Types



Travel Card



Subsidy Card



Employer ID



Student ID



Debit Card

Public Transportation

Initially ...



City Bus



Metro



Taxi

Modal expansion



Intercity Bus



Rail



EV sharing



Bike sharing



Multi-functions

Public Service

- Parking,
- City Utility Charge
- Library



Retail

- Shops
- Vending Machine



Government Subsidy

- Discount
- Travel Benefit
- Low income Subsidy

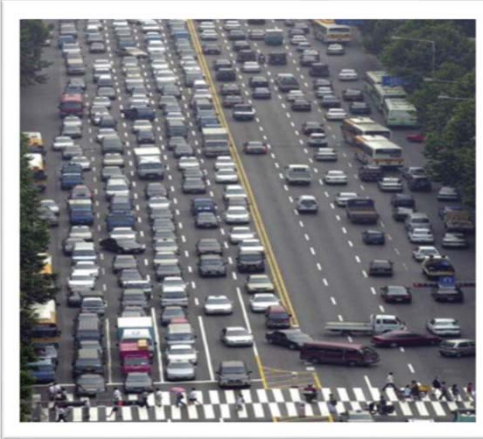


Employer Benefit

- Access Control
- Meal Coupon
- Travel Benefit

04 Seoul & T-Money: Background 1/2

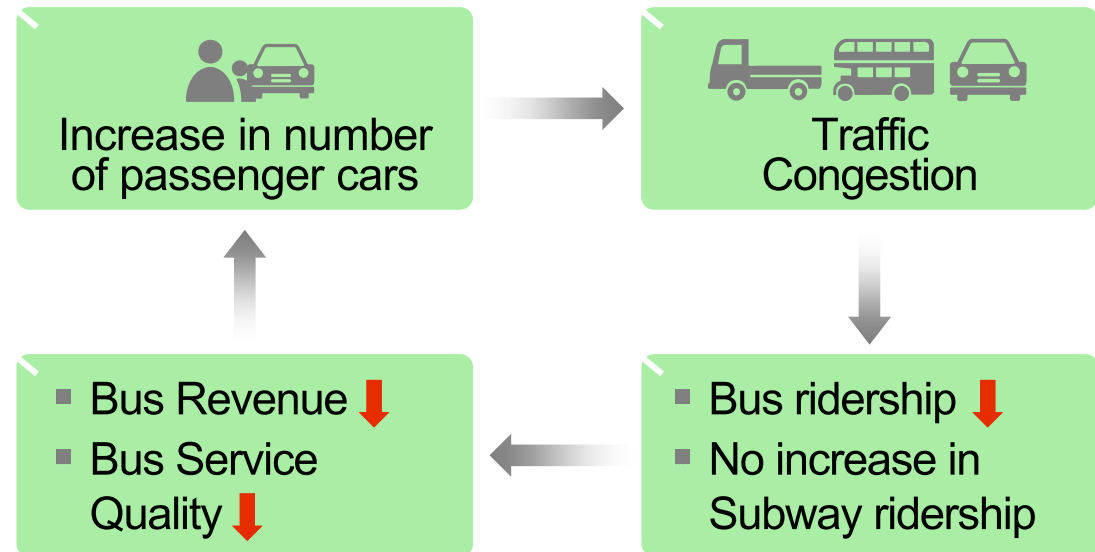
Seoul, Korea



- Seoul Metropolitan Area : 12,446 km²
- Inhabitants : 22.5M

**One of the Most
Densely
Populated Cities**

Background of Public Transit Reformation



- Traffic Volume :
 - 2.7M cars/day ('96) → 3.2M cars/day ('03, before NTCS)
- Ridership of Bus :
 - 30% ('97) → 26% ('03, before NTCS)

04 Seoul & T-Money: Background 2/2

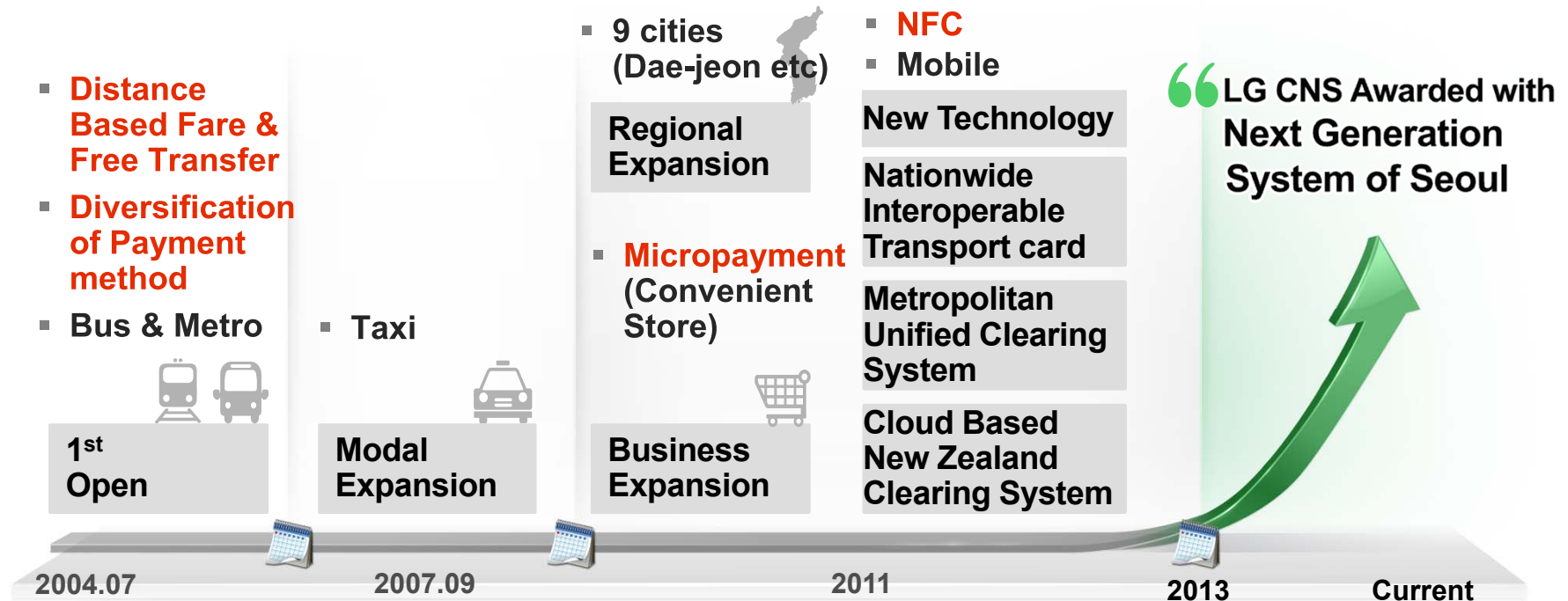
Conditions during the design and implementation



Must open on schedule no matter what happens!

Mr. Myung-Bak Lee,
Mayor of Seoul

- New Fare Media
- Bus route re-organization
- Complicated Fare Policy
- Free transfer



04 Seoul & T- Money : Today



NTCS (New Transportation Card System)

Integrated Clearing System

Distance Based Fare



Free Transfer



Metro

- 4 operators / 526 stations / 8,915 gates / **13,994** devices



Bus

- 200 operators / 9,540 bus
- 18,148** devices



Taxi

- 72,179** taxi with validators of Smart cards



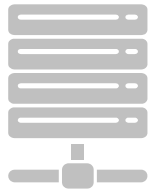
Micro payment

- 102,015** convenience stores

04 Seoul & T-Money : Results



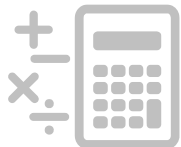
today in Seoul...



▪ Max **40M**
Transactions/day



▪ Daily Users : **6 M**



▪ Daily Avg.
Clearing & Settlement
Amount : **€ 9 M**

Average Bus Speed



39.0%



Public Transportation
Passenger



17.5%



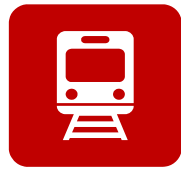
Transportation Card Usage:

Modal	2003	2013
Bus	77.6%	98.0%
Metro	63.8%	100%
Taxi	N/A	54%
Total of PT	71.0%	99% (Taxi excluded)

04 Seoul & T-Money : Equipment



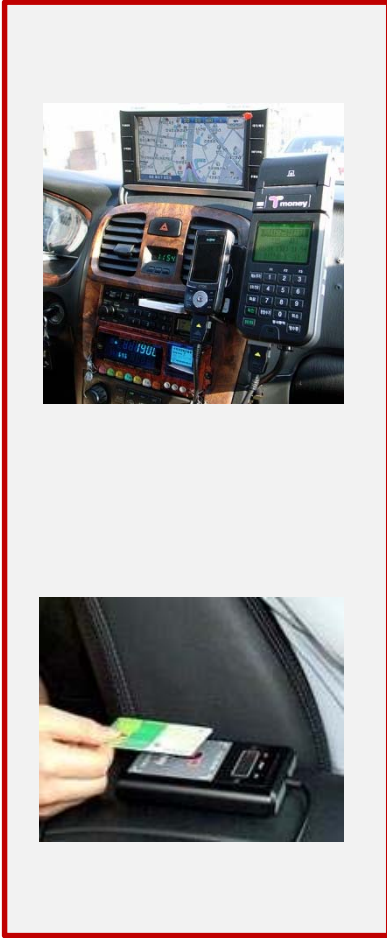
Bus



Metro



Taxi



04 Seoul & T-Money : Top up at the TVMs (NFC)

Place the Smartphone



Payment



Top up



04 Seoul & T-Money : NFC

Mobile Prepaid Card based Top up & Payment and VAS Service Provider.



Mobile Top up

Various Top Up method such as Phone Bill, Credit Card, Bank Transfer etc.

Online Payment

- Easy purchase process
- No risk

Auto Top up

Automatic Top Up for insufficient balance

T-money Infra

Compatible with KSCC offline top up/payment infrastructure

Money Transfer

Utilizing payment service to P2P area

Value Added Service

- Inquiry of payment history
- Children Safety Service

04 Seoul & T-Money : Other services

- Convenience Stores
- Certificate Documentation Issuer
- Vending Machines



06 AFC: Major References



Megacity Experiences in Seoul, Korea

Business Scale

8,900 +
Metro Gate

9,500 +
Bus

72,000 +
Taxi

102,000 +
Micropayment

30 Mil+
Transaction /day

12 Mil + USD
Fare Settlement /day



Business Scale

- Target: 12,000 Buses+, 39 BRT stations

Project Duration

- 24+ months of Implementation
- 15 years of O&M afterward

Solutions Applied

- LG CNS AFC & LG CNS FMS

Megacity Experiences in Bogotá, Colombia

Key Feature

- **Cloud based Service**
Settlement data is transferred back to the clearing center located at the Seoul headquarters

Benefit

- It is possible to apply for the middle-small sized cities through the cloud based service



Cloud Based Experiences
in **Wellington, New Zealand**

WHAT IS LG CNS TAXI Solution



08 Why LG CNS

■ The World best Performance:

- Proven to handle *40 mil. transactions/day* in public transportation with 6 million card users
- Proven to support Mega city & the multi-modal transportation environment (*Metro : 500 stations, BRT 32 stations, Bus 8k vehicles, Taxi: 7k vehicles*)
- Proven to support complex business rules : multi modal & distance based fare, transfer fare

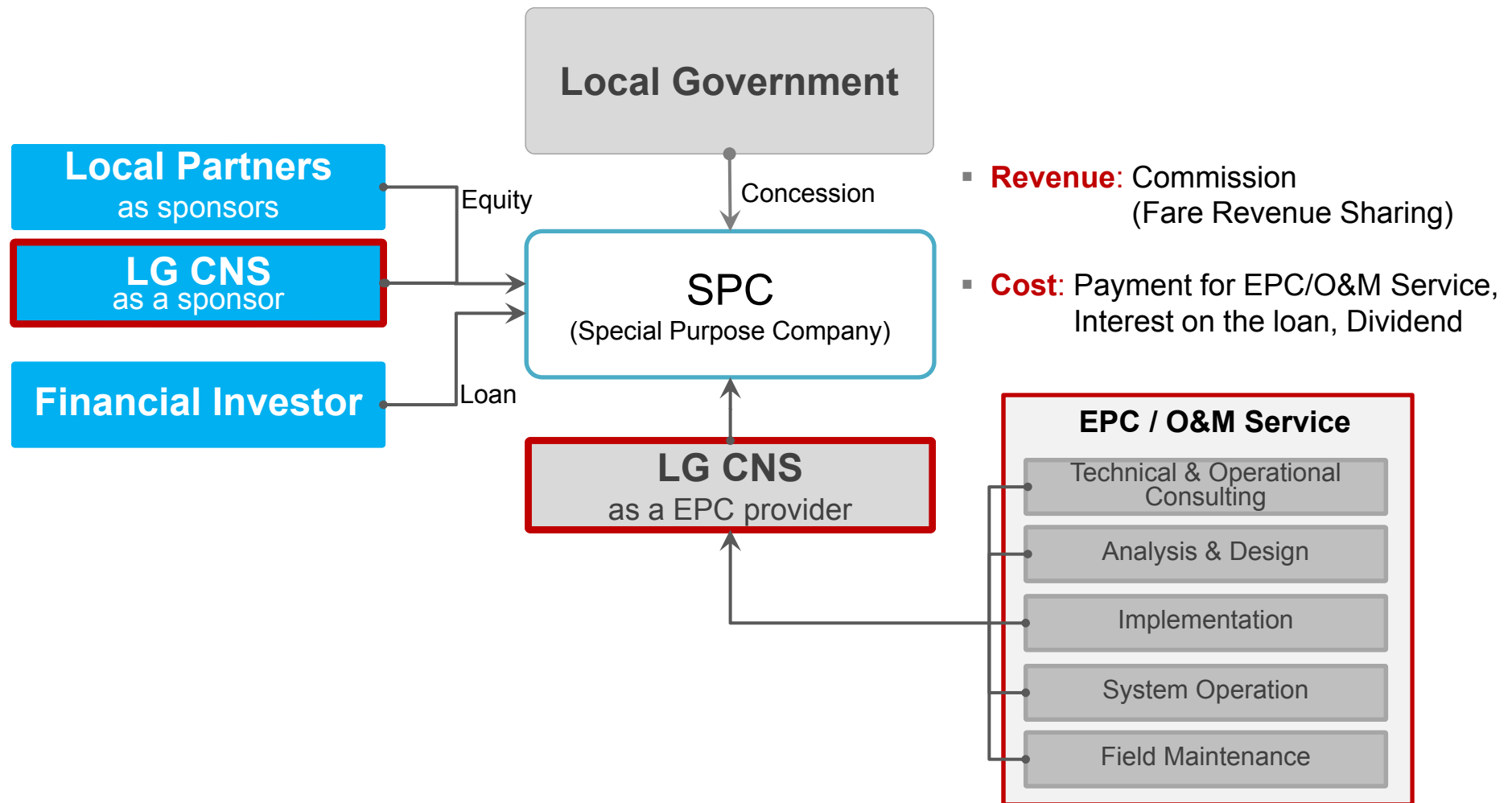
■ Flexibility & interoperability: Any Device/ Any Modal

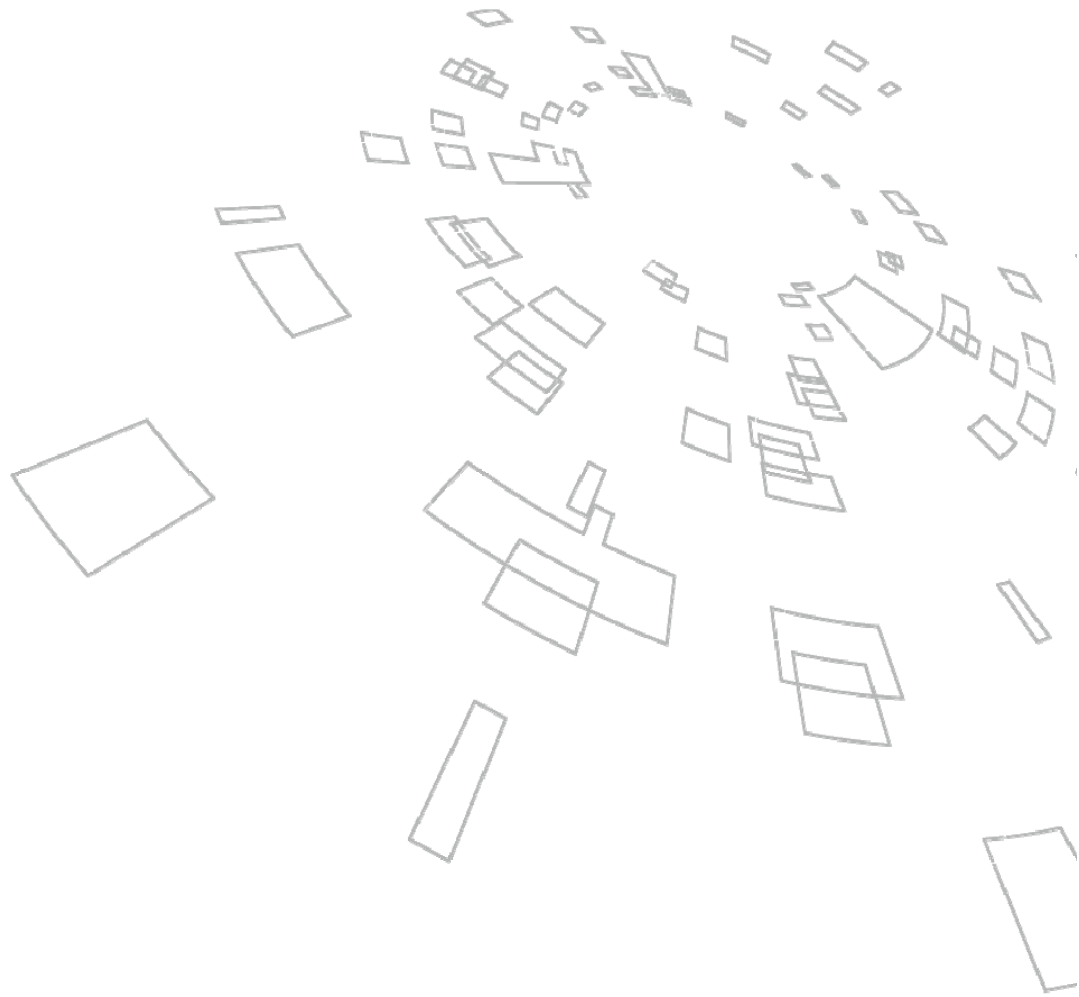
- Easy to integrate with Client's preferred equipments
- Proven to support various transit operators CCH functions in Mega city environment (*Metro : 9 operators, BRT 10 operators, Bus 200 operators, Taxi: 200 operators*)

■ Innovative :

- Expandable to Micro payment business (retail)
- Flexible to adopt new Technologies (*NFC and Mobile*)
- *Big data application to improve passenger service, operating excellence and policy making*

Appendix Public-Private Partnership Business Model





Thank You

