Introduction to Seoul Transport
Seoul Condition & Transport Infra

- **Seoul**: 10.3mil. (Capital region 25mil)
- **Population**: 3.1mil. (Capital region 4.7mil)
- **Transport Infra**: 327.1km (9 lines)
- **Precinct**: 605㎢
- **Rate of Seoul’s Population in Korea**: 27%
- **Distance**: 372,109
Dramatic Increasing Of Traffic Congestion

- Increasing of Income
- Rapidly Increasing of Pop.

Transport Condition

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Vehicle</th>
<th>Length of Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2015</td>
<td>3.1mil.</td>
<td>8,214km</td>
</tr>
</tbody>
</table>

Increasing of 15 times

Increasing of 1.2 times
Modal Share.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit</td>
<td>38.8%</td>
</tr>
<tr>
<td>Car</td>
<td>27.1%</td>
</tr>
<tr>
<td>Bicycle</td>
<td>22.9%</td>
</tr>
<tr>
<td>Bus</td>
<td>6.8%</td>
</tr>
<tr>
<td>Other</td>
<td>4.4%</td>
</tr>
</tbody>
</table>

**Transit Share rate**: 65.9%

**Trips per day**: 32.5mil.

**Congestion Cost**: 76.5bil.

**Shift in Travel Speed & Traffic Congestion Cost**

- **Congestion Cost**
- **Speed in CBD**
- **Bus Speed**
- **Overall Speed**
History and Change of Seoul Transport

1950 - Korea War
- Little Transport Service
  - Not Enough Transportation Infra
  - Low Transit Service

1970
- Building Urban Infrastructure
  - Building Transportation Network (Subway, Road, Bridge)

1980
- Era of “My Car”
  - Building Urban Expressway

1988
- Seoul Olympic
History and Change of Seoul Transport

Increased Traffic Congestion
- Initiating Travel Demand Management
- Starting ITS & TSM

2000

Public Transportation Reform
- Expand BRT (Bus Rapid Transit)
- Integrated Fare & Transfer system (Subway + Bus)

2004

Human-oriented transportation
- Rebuilding Road Space for Pedestrian
- Car Sharing and Bicycle sharing Services

2010
The vision of Seoul Transportation

Supply-oriented Transport

The Great Public Transportation Service & Strengthening TDM

New Vision

HUMAN-oriented

Eco-friendly, Human-Oriented Transportation

ITS & Share

- Upgrade of Transportation System based on ITS
- Sharing of Car & Parking lot

Depended on Fossil Fuels
Vehicle-oriented City
Subway Service

1974 OPEN

Line 1~9
336.1km, 307 stations
3,715 rolling stocks
※ National railroad in Seoul
121.7km

5.4mil. /day

Safe and Pleasant
Platform Screen Door & Free WiFi at all stations
Seoul’s Challenges & Achievements in Sustainable Urban Transport

Subway Service

1974 OPEN

- Line 1~9
  - 336.1km, 307 stations
  - 3,715 rolling stocks
  - National railroad in Seoul 121.7km

- 5.4mil. /day
- Safe and Pleasant
  - Platform Screen Door & Free WiFi at all stations

Convenient Facilities
- Free WiFi
- Screen Door

- Concrete Rail
- high-pressure watering carts

- ECO
- Convenient Facilities
Extend Subway Network.

Network of LRT Line
for low-transit service area

LRT Construction
(96.7km, 9 lines)

Extend Metro Line
Network

Under Construction Line 9, 12.9km
Planning Line 4, Line 5, Line 8

19.5km
96.7km
Bus Service

All City Buses, Eco-friendly
(CNG or Electronic Buses)

2,589 Low-flower Buses
(35% of All city buses)

High-class Bus Stop
(convenient Shelter, BIT)

City Bus
- 390 routes, 7,855 buses
- 6,064 bus stops
- 19,910 bus drivers

5.8mil. /day

Night Bus
- 00-05
- 8 routes, 47 buses

Safe Return
- Choice of Place to get off near home after 11 PM
- Return home with Safe Scout
Public Transport Reform (PTR) in Seoul
Seoul’s Challenges & Achievements in Sustainable Urban Transport

Changes in policy framework, setting a new target

PTR – Public Transportation Reform: Background

Limitations

Supply ↓ Demand ↑
- Urban & Sub-urban development
- Increasing of Traffic Demand
- Traffic Congestion Cost Increase

Road Construction
- Developed Area
- High Construction Cost ($50~80million / km)

Subway Construction
- Long Construction Time (10~20years)
- High Construction Cost ($100~110million / km)

Problems

Bus Route
- Complicated, Centralized in Particular Lines

Company
- Small Size, Low Willingness to Invest

Operation
- Slow, Not on time

Drivers & Passenger
- Poor Welfare, Unfriendly
- Uncomfortable

What should we do

Public Transportation Reform

Not a Choice But a Must
PTR – Reorganized bus routes and numbering system

**Inter-regional Lines**
Meet the demand of passenger car

**Connecting suburban areas and center cities**
Meet the demand of passenger car

**Link trunk line buses or subways for easy transfer**
Satisfy the local needs and secure accessibility

**Circular bus service for business in urban areas**

- **(Sub)Urban areas ↔ Center cities**
- **Trunk Lines**
- **Feeder Lines**
- **Circular Lines**

Changes in policy framework, setting a new target

Seoul’s Challenges & Achievements in Sustainable Urban Transport
PTR – Bus Rapid Transit (BRT)

For faster, reliable & Punctual bus
PTR – Bus Rapid Transit (BRT)

For faster, reliable & Punctual bus

12 Corridor, 119.3 km

- 35.5 km: 2004 Plan
- 119.3 km: 2015 (Operated)
- 223.3 km: Plan

BRT Station: 000

Bus Speed:
- 2004: 15 km/h
- 2014: 19 km/h

33% reduction

Variance in Operation Time:
± 1-2 min
PTR – Major Achievement

Social benefits expected: $1.4 billion

**Increase of Passengers**

- '03 7-12: 9,322
- '05 7-12: 9,833
- '10 7-12: 10,588
- '11 7-12: 10,874

**Decline in bus accidents**

- '04 1-6: 1,139
- '05 1-6: 706
- '10 1-6: 581
- '11 1-6: 502

**Citizens’ satisfaction**

- Satisfied
  - '04 6-24: 41.8
  - '05: 51.4
  - '06: 45.1
  - '11: 88.5

- Fare
  - '04 6-24: 35.8
  - '05: 30.4
  - '06: 17.5
  - '11: 13.8

- Not satisfied
  - '04 6-24: 22.4
  - '05: 17.5
  - '06: 13.8
  - '11: 8.3

**Increase in fare revenues (Bus)**

- '04 1-6: 2,400
- '05 1-6: 2,600
- '06 1-6: 2,800
- '07 1-6: 3,000
- '08 1-6: 3,200
- '09 1-6: 3,200
- '10 1-6: 3,200

(No. of accidents / month)
Pedestrian Priority

Pedestrian-oriented transportation environment

- Car-free Day
- Transit Mall
- Car-free Street
- Barrier-free walking Space
Brief on Seoul Transport

- Transit shared close about 70%
- Balanced with bus & subway
- Transit subsidy burden
- Illegal parking and abnormal traffic manner
- Strong traffic information basis
- Traffic congestion and accidents issues
- Traffic operation & management crucial
Smart Seoul Transport
History of Seoul TOPIS 1

**TOPIS 1.0 Seoul TOPIS**
- 2004 : Open TOPIS, Install Smart Cart System
- 2005 : Unmanned Surveillance System

**“The First” introduction of ITS**
- 1998 : Implementation in Nam-San area(10.6km)
- 2000 : Advanced traffic management system in urban expressway

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Seoul’s Challenges & Achievements in Sustainable Urban Transport
Efforts of Seoul for sustainable urban transport

Seoul’s Challenges & Achievements in Sustainable Urban Transport

Present of Seoul TOPIS 1

1,268 km
Length of roads for travel speed data collection

35,000 Vehicles
Probe car collecting GPS data

1,181 Detectors
Volume Speed Incident

CCTV
832
24 hour Traffic surveillance & monitoring

VMS
326
Real time traffic signal controller

VDS
3600 Controllers

Lane Control System (LCS)
33 Systems

Ramp Metering System (RMS)
13 Systems
Efforts of Seoul for sustainable urban transport

Seoul’s Challenges & Achievements in Sustainable Urban Transport

Present of Seoul TOPIS 2

- 44% of all bus stops
- 2,612 Bus Information Terminal
- 7,800 devices (BMS & Transportation card devices)
- 98% Accuracy of BIS
- 96% Citizen’s satisfaction for BIS
- 24 million/day The Number of open data (traffic & bus information)
- 85 million/day The number of transportation Card Data
- 192 km Only Traffic communications network
- 1,600 Persons/year Foreign visitor to TOPIS
ITS: Seoul TOPIS

Center for 24 hour monitoring and surveillance

- Road traffic, Transit, Disaster & Emergency
- Data Integration & analysis
- Monitoring
- Control & Operating
- Control & Operating
- VDS/CCTV/AVI
- Bus OBE/Taxi GPS
- Incident & Disaster Information
- Traffic Signal
- Transportation Card Data
- Citizen Reports
- Meteorological
- Police agency

- 35,000 Vehicles
- CCTV 832
- 3600 controllers
- 33 Lane control systems
- 13 Lamp metering
ITS: BMS and BIS

Scientific management and convenience

- 44% of all bus stops
- 2,612
- 98% accuracy of BIS
- 96% citizen’s satisfaction

The Number of open data (traffic & bus information)

24mil./day
Auto penalty charging system

Fast and efficient enforcement

1) Searching vehicle owner
   Automatic vehicle owner search

2) Charging penalty
   charging the charge by mail

3) Sending Mail
   Automatic mail sending

Take 2-3 days to deliver the fine bill to vehicle owner (Non automatic system: 10~15 days)
Seoul Transport Strategies

• Solid and tangible goals
• Efficient transit operation and management
• Sustainable investment on transit
• Advanced ITS services
• Timely demand management
• Fairly low level of transit fare
• Removal of overpass roads
• Expanding walking spaces
Critical Transport Issues
ITS and Next.....

- Maximum utilizing the existing systems developed
- Rational and proper investment
- Integrated operation/management
- Periodic & severe assessment
- Services adapted to demand
- Continuous monitoring performance
- Collaborated transport with ICT Experts and related
Road vs Rail

• What is the better?
• Seoul: bus, Beijing/Tokyo: rail
• Operational implication
• Reasonable investment
• Focused on safe and comfortable transportation (less congestion)
• In retrospect of land use
Traffic Safety (Road)

- Fatality of accident
- No of accidents
- Proper safety policy
- Traffic accident zero?
- Related to transport manner?
- Near accident?
- A city w/o vehicle, then no accident?
- Vicious circle between congestion and accident
Transport Culture (Manner)

• Serious social problem in Korea
• Especially in parking case
• What are the causes?
• Normal manner in Japan. Why?
• How about in China, US & Europe?
• Differences bet. Korea & Japan
• Enforcement? Penalty?
• Related to accident & congestion
Climate Change & Environment

- Climate change and transport
- Pollution emitted and noise
- Risky environment by transport
- Landscape matters
- A model city for benchmarking
- Urbanization and transport
- Is transit sustainable solution?
New Transport & Trends

- Green transport
- Electric vehicle & others
- Autonomous vehicle
- PRT & New railways
- Development of new bike ways
- Moving belt
- Stick to traditional transport
- Flying vehicle
Evaluation of operation

• Benchmarking each other
• Better management in transit
• More rational policy emerged
• Efficient budgeting
• Reducing accidents & congestion
• Optimistic impacts on our life
• Basis for regulations
• Economic benefits
What are real demand?

- Mobility, Accessibility, Comfort ???
- Less distance/time in trip ?
- Better urban planning by transport?
- Extension of transit facilities ?
- Less costs ?
- Door-to-door service ?
- No more city life, move to rural ?
- Work at home ?
Comparing Tokyo and Seoul in Transport
Findings from comparison

• Land use: Sprawl vs High rise
• Excellent railway operations and maintenance in Tokyo
• Efficient Bus Rapid Transit (BRT) case in Seoul
• Superb traffic manner in Tokyo
• Pretty low transit fare in Seoul
• Successful parking validation policy in Tokyo
Factors to evaluate

- Traffic congestion
- Traffic safety
- Rail/Bus/Private vehicle
- Traffic manner
- Parking
- Government will
- City structure
- Others
Thanks
감사합니다

Any further Questions
bayridge2384@gmail.com