TOWARDS A GREENER AND SMARTER TRANSPORT NETWORK:
Leveraging Seoul's Experiences with the World Bank

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SEOUL METROPOLITAN GOVERNMENT

SEOUL MY SOUL
서울마이소울

SEOUL METROPOLITAN GOVERNMENT
SUSA
Seoul Urban Solutions Agency
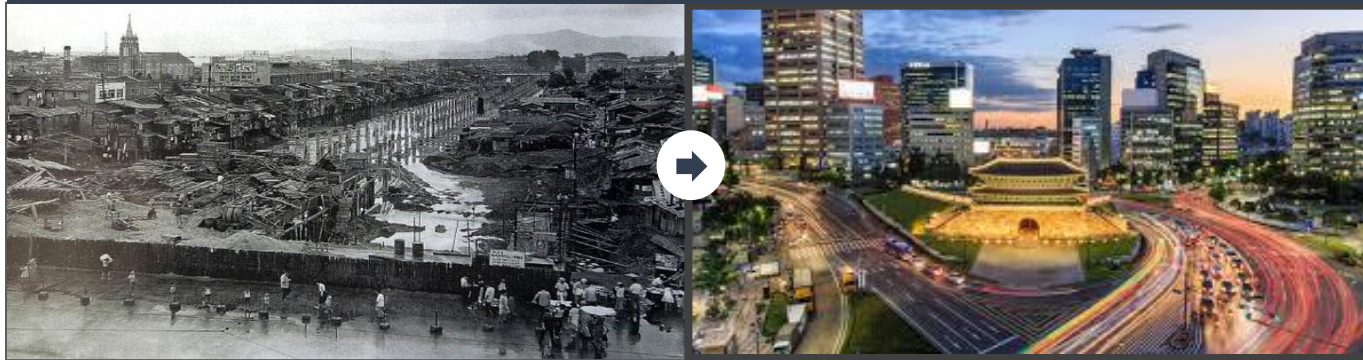
Seoul's Policy Sharing Initiative

- The urban problems experienced by Seoul and the process of coping with them will be benchmarked.
- Experience in efficiently addressing urban issues with constrained resources, encompassing policy formulation, technology application, governance systems, financing and public–private partnership
- Increased demand for knowledge exchange on urban management (104 projects in 40+ countries, as of Oct. 2023)

Seoul's Journey from ruins in the 1950s to a smart metropolis
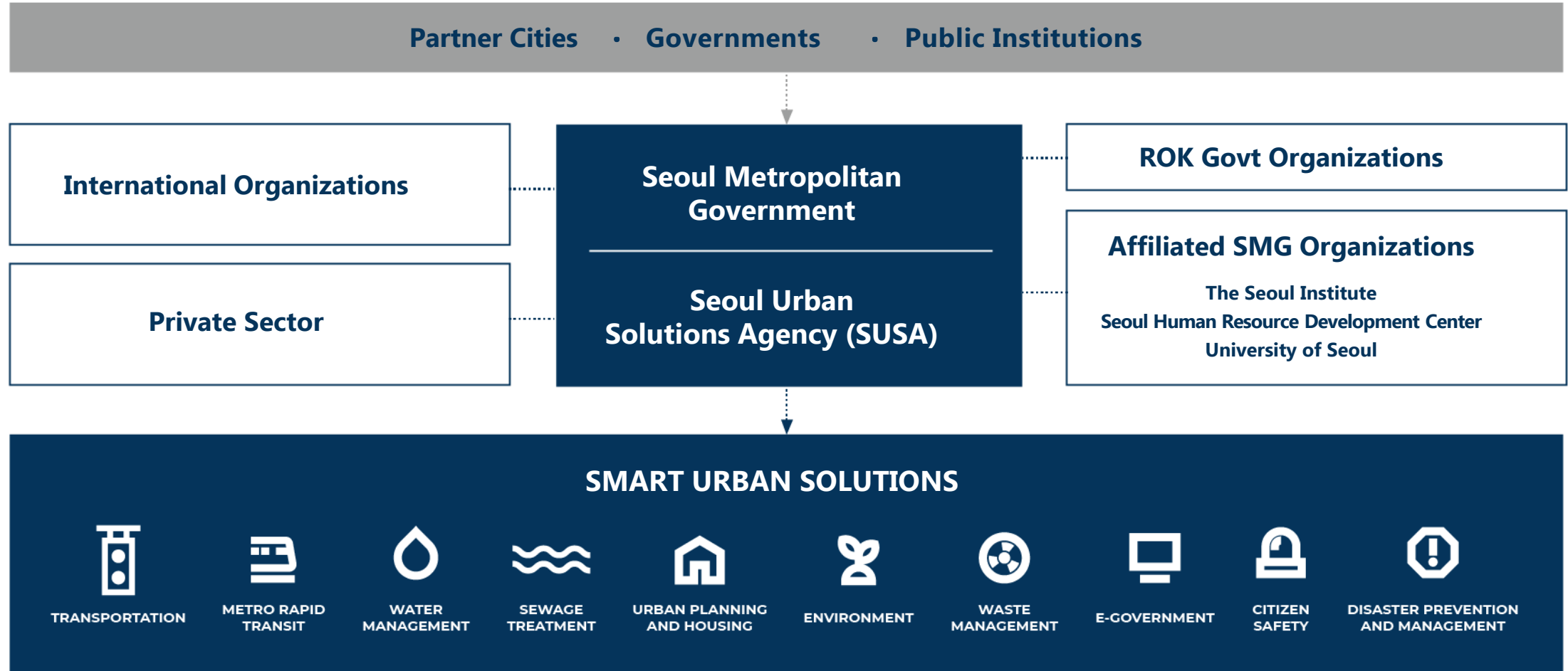

Seoul Digital Media City (DMC) (2003-2005)

IT Business Complex
Broadcast Stations

Seoul's Cooperation Records

40+ COUNTRIES

65+ CITIES

104 PROJECTS

SUSA as an agent in delivering the integrated solution

CITY'S URBAN DEVELOPMENT NEEDS

PUBLIC SECTOR CAPABILITIES	BUSINESS SOLUTIONS

INTEGRATED SOLUTIONS

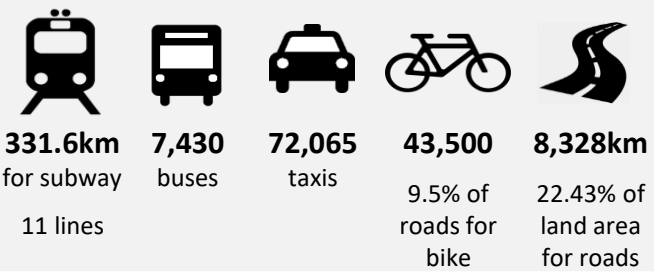| POLICY PACKAGE	HARDWARE SOLUTIONS	SOFTWARE SOLUTIONS	EXPERTISE TRANSFER

SERVICES

WE PROVIDE

- POLICY ADVISORY / TECHNICAL ASSISTANCE
- PROJECT IDENTIFICATION, PREPARATION, RESOURCE MOBILIZATION & IMPLEMENTATION
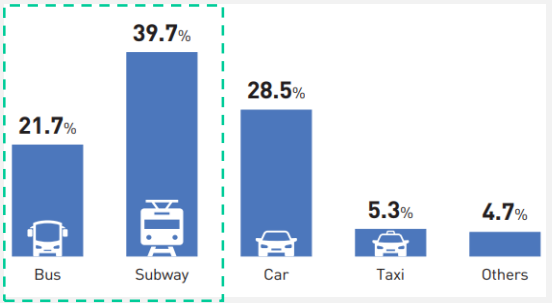- O&M SUPPORT

- STUDY VISITS
- KNOWLEDGE EXCHANGE
- CAPACITY BUILDING

SEOUL: Transit-Oriented City

Public transportations and roads in Seoul

331.6km	7,430	72,065	43,500	8,328km
for subway	buses	taxis	9.5% of roads for bike	22.43% of land area for roads
11 lines				

Seamless Integration: Transfer Center connects various transportations in one place

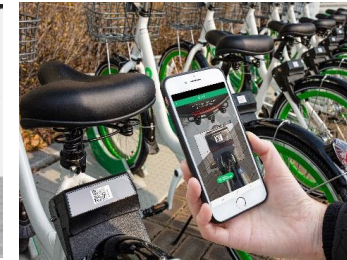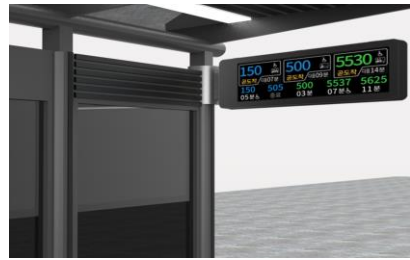| Bus	Subway	Car	Taxi	Others
21.7%	39.7%	28.5%	5.3%	4.7%

Public Transit Mode Share: 61.4%

Daily Transit Passengers : 8.5million

Smart shelter

2004 REFORM : INTEGRATING PUBLIC TRANSIT

BUS SERVICE REFORM

- Quasi-Public Management
- Exclusive Median Bus Lanes
- Restructuring Bus Routes

INTEGRATED FARE SYSTEM

- Distance-based transit fare
- Free inter-modal transfer
- Discount for T-Money card

TRANSFER CENTERS

- Integrates different modes of public transport for easy and speedy transfer

IMPACT

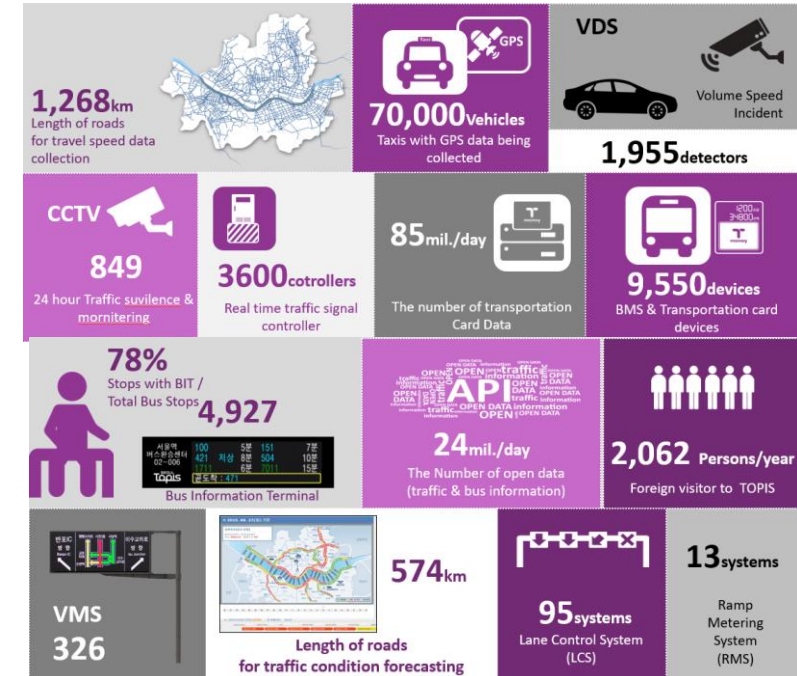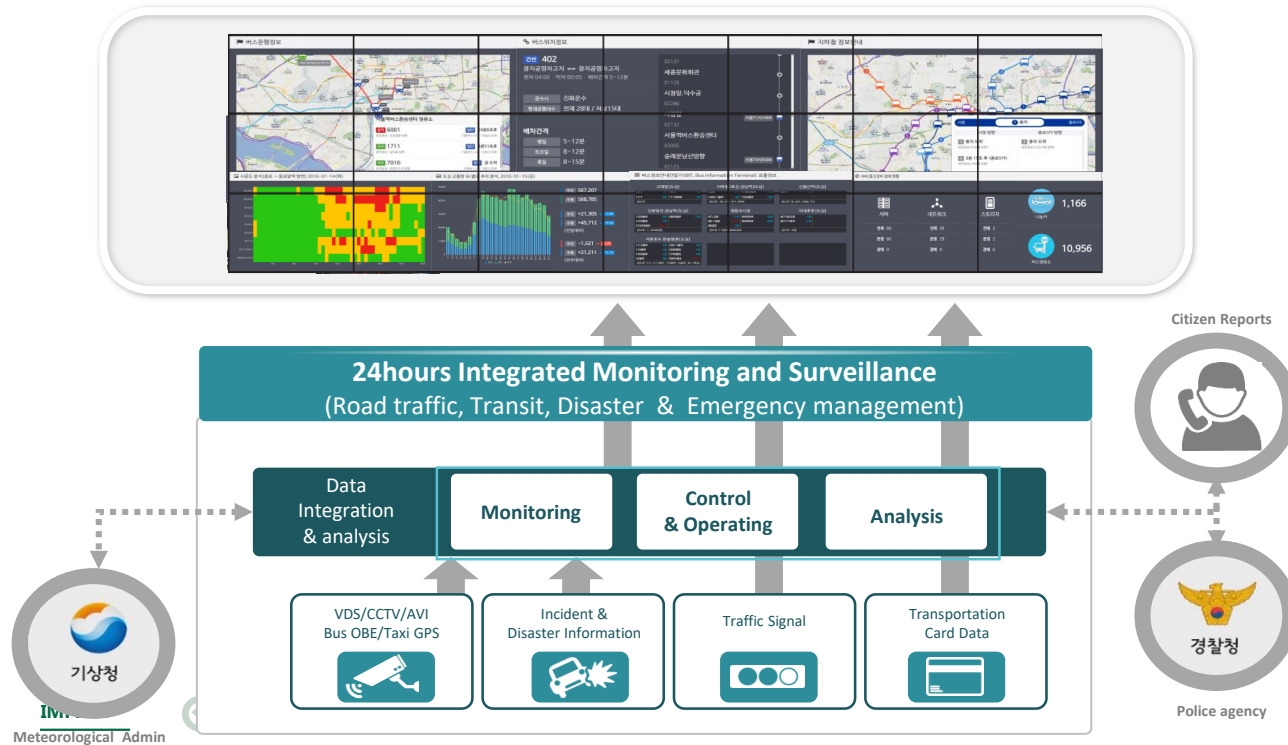**4.6%** ON-TIME ARRIVAL

9.4% BUS RIDERSHIP

32% SERVICE SATISFACTION

680,000 AVERAGE DAILY PASSENGER
3.99M (2004) > 4.7M (2005)

TOPIS Comprehensive Urban Transportation Management Platform

24hours Integrated Monitoring and Surveillance
(Road traffic, Transit, Disaster & Emergency management)

Data Integration & analysis

Monitoring | Control & Operating | Analysis

VDS/CCTV/AVI Bus OBE/Taxi GPS | Incident & Disaster Information | Traffic Signal | Transportation Card Data

기상청
IM...
Meteorological Admin

Citizen Reports

경찰청
Police agency

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

70,000 Vehicles Taxis with GPS data being collected

VDS Volume Speed Incident
1,955 detectors

CCTV 849 24 hour Traffic suvilence & mornitering

3600 cotrollers Real time traffic signal controller

85 mil./day The number of transportation Card Data

9,550 devices BMS & Transportation card devices

78% Stops with BIT / Total Bus Stops **4,927**

24 mil./day The Number of open data (traffic & bus information)

2,062 Persons/year Foreign visitor to TOPIS

Bus Information Terminal

VMS 326

574km Length of roads for traffic condition forecasting

95 systems Lane Control System (LCS)

13 systems Ramp Metering System (RMS)

Integrated Management : Enables real-time management of Seoul's transport network operation as a whole.

Open Data : TOPIS information is made 100% open to public, enhancing trust & facilitating innovations.

Cost-Effective : Intelligent and automated modular systems enhances cost/time effectiveness in transport operations and systems maintenance.

DATA-DRIVEN POLICY PLANNING

USING BIG DATA ANALYSIS FOR BUS ROUTE PLANNING & INTERVAL PLANNING
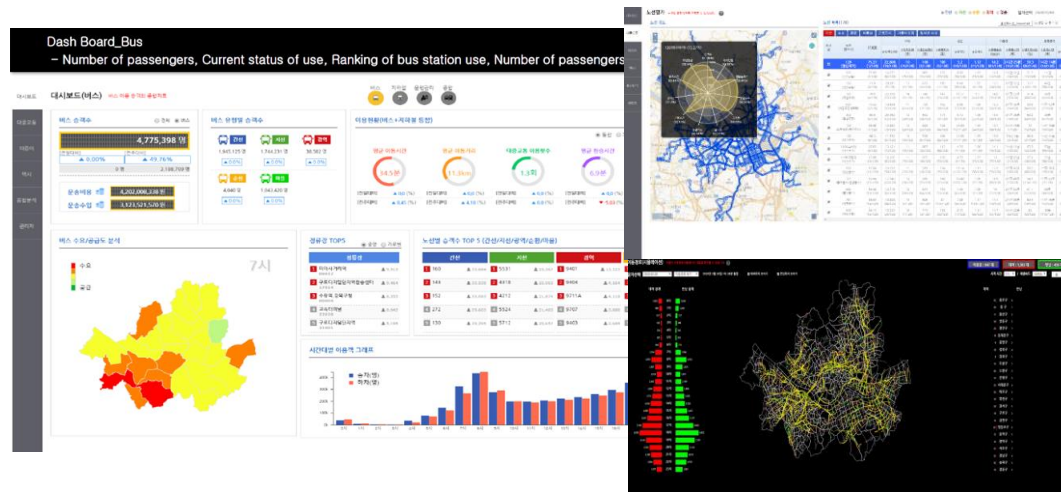

- 85 million traffic card data and 26 million transport operations data generated on a daily basis are leveraged to enable accurate and real time analysis for transportation planning, such as route rationalization, interval planning, forecasting, and simulation.

- In addition to public data, partnership with a private network operator grants access to billions of anonymized call logs to better understand how citizens move.

IMPACT

Demand-Responsive : Big data analysis enables user-centric policy design that is responsive to the real and dynamically changing needs of citizens, as well as providing an effective and economic alternative to traditional methodologies. I.E. Seoul's 9 Night Owl Bus routes, having served over 10 million cumulative trips, were designed through big data analysis.
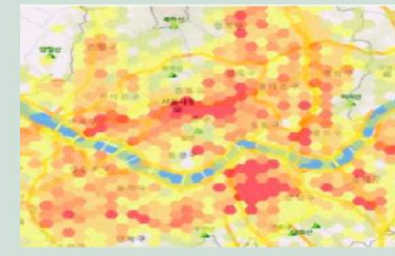
MULTI-DIMENSIONAL INITIATIVES FOR SUSTAINABLE ROAD TRAFFIC

ELECTRIC VEHICLES

- 1,039 EV buses, FECV 27, 5,565 EV Taxis

- Various subsidies & incentives for EV

- Installing smart EV charging stations

SHARED MOBILITY

- 2012 'Sharing City, Seoul' declaration

- City-run car-sharing service

- Public share bikes, 'Ttareungyi'

1 x [car] = **8.5** ↓ passenger cars
Shared car

LESS DRIVING, LESS EMISSION

- Low Emission Zone & Green Transportation Area

- Weekly No-Driving Day & Driving Mileage

- 'Road diet' for more pedestrian-friendly space

IMPACT

- ☑ **Real Reduction :** 3 million tons of CO_2 and 792,000 TOE - 16% reduction in transport energy consumption [2008-2017]

- ☑ **Catalyst for Change :** SMG's initiatives in EV and shared mobility have led to a rise in private services in sustainable mobility.

- ☑ **Intelligent Planning :** Data-based design optimizes infrastructure installation (charging stations, shared bike docks, etc.)

Safe, Inclusive and Sustainable Transportation System

Better Air Quality (AQ) & Ventilation

SMART AQ Management System

840 air quality sensors at 277 stations

Optimal ventilation based on big data analysis

Green Transport Zone

Access control for Class-5 emission vehicles

Green Instant Payment System

Automatic payment using IoT and automatic license plate recognition: parking, tunnel, congestion charge

Barrier-Free Transportation

Install elevators in all subway stations by 2022

Replace all intra-city buses with low floor vehicles by 2025

BARRIER FREE ACCESS

Low-Floor Bus Reservation Service

Available for passengers with special needs to board at the bus stop of their choice.

Climate Card

Unlimited transit for $50 a month

Connected Public Transport

5G Connected Public Transport

V2V, V2I, V2P, V2X …

Traffic Safety Service

Late-night autonomous buses as pubic transportation (23.11~)

Innovative Solutions for Urban Mobility in Almaty and Tashkent (2021-23)

THE WORLD BANK IBRD • IDA | WORLD BANK GROUP

KOREA GREEN GROWTH TRUST FUND

KGID CAIRO

Project to support Almaty and Tashkent by bringing international experience in smart solutions to tackle urban mobility issues mainly congestion and transport emissions.

CHALLENGES & ISSUES

> **Traffic Congestion**
- Increasing car ownership
- Old car issues

Congestion in Tashkent

> **Air Pollution**
- Air quality decreasing
- Traffic congestion's influence

Pollution in Tashkent

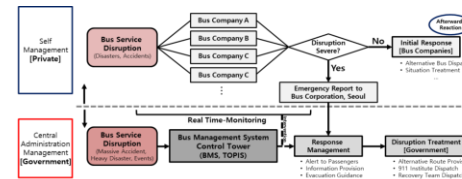> **Disasters (Flooding, Heavy Snow, Pandemic)**
- Flooding caused by heavy rains, melting Snow
- Annual heavy snow issues
- Abnormal climate situations
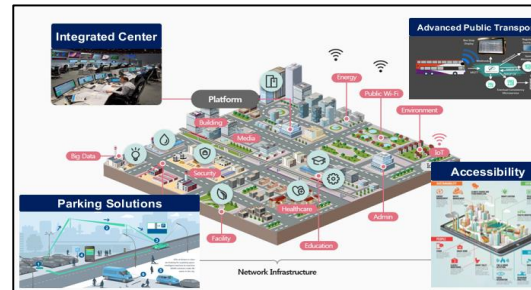- Response to COVID-19

T/A, CONSULTING

1) Enhancing Public Transport Resilience

Operational Procedures in Case of Disruptions

2) Smart City Solutions (Mobility Management)


3) Capacity Building

Potential Investment Projects

- Advanced Traffic Management System
- Integrated Data Platform
- Mobility Hub
- Low Emission Zone, etc.

Photo Source: Seoul Institute (2022), SMG

SMART SOLUTIONS FOR ALMATY AND TASHKENT

ALMATY

TASHKENT

Enhancing Public Transport Resilience

- **Public Transport**: Increasing Car ownership, Lack of Public Transport Coverage, ride comport
- **Adoption of Green transport**: Lack of e-vehicle charging infrastructure
- **Congestion**: Need for improved traffic signal and road marking
- **Illegal parking along the roads**
- **Disruptions** caused by heavy rainfall and flooding
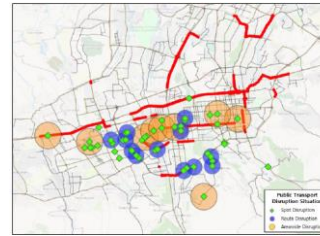
Almaty public transport risk exposure analysis result

Logical Progression of Pilot Project Development

Smart City Solutions
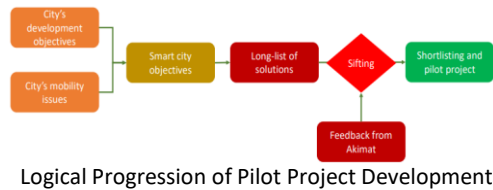
Logical Progression of Pilot Project Development

① Traffic Management Zone
② Smart bus priority measure
③ Mobility centre
④ Incident detection system
⑤ **Smart transit hub**

Services to improve public transport efficiency
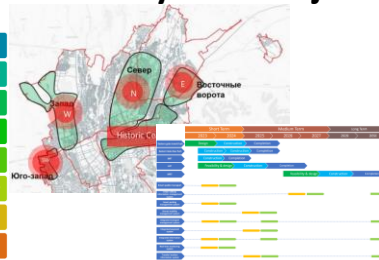
Pilot Project

"The Eastern Gateway Pilot Project"

Case Studies: Yeouido, Seoul

Functional Outline

Smart Transit Hub Action Plan

"Improvement of BRT connection and customer service "

8 Lanes	8 Lanes	6 Lanes	6 Lanes	4 Lanes
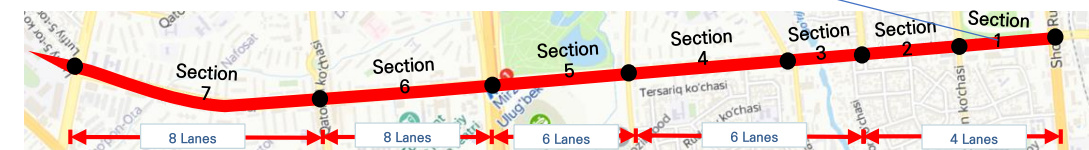
Bus Priority Signals, BIS, Bus lane violation enforcement, illegal parking enforcement, Smart Bus Stop, etc.

* Source: The (Draft) Report by the Consulting Team (Seoul Institute consortium and ITP)

WORLD BANK – SEOUL COLLABORATION

PAST COLLABORATIONS IN TRANSPORT SECTOR

BIG DATA
Solutions for Development

Knowledge Sharing Series on Innovation for Development

Kyiv City State Administration · SEOUL · SUSA · nipa · Ministry of Strategy and Finance · WORLD BANK GROUP

KYIV CITY STATE ADMINISTRATION (KYIV), UKRAINE &
SEOUL METROPOLITAN GOVERNMENT (SMG), KOREA
KNOWLEDGE EXCHANGE WORKSHOP AND FEASIBILITY STUDY MEETING
ON TRANSPORT POLICY AND BIG DATA SOLUTIONS
DATE: JUNE 5-9, 2017
SEOUL, KOREA

World Bank – Seoul
Big Data Solutions for
Development Conference

World Bank-SEOUL KNOWLEDGE
EXCHANGE WORKSHOP AND
FEASIBILITY STUDY MEETING ON
TRANSPORT POLICY AND BIG DATA
SOLUTIONS

KYIV SMART CITY

Smart City and Traffic
Management for Kiev,
Ukraine

GESTIÓN DE TRÁNSITO Y
TRANSPORTE SOSTENIBLE
LIMA

Informing climate-smart and
safe traffic management
and sustainable transport
interventions in Lima, Peru

PROPOSED COLLABORATION GOING FORWARD

KNOWLEDGE SHARING	PROJECT IDENTIFACATION	PROJECT PREPARATION	PROJECT IMPLEMENTATION	O&M SUPPORT
- City-to-city based knowledge exchange & collaboration - Joint knowledge events - Case study documentation	- Facilitating coordination between WBG, Korean Gov't, client cities for resource mobilization - Project concept origination (based on C2C cooperation) - Pre F/S	- Delivery of targeted TA & policy advisory - Masterplanning, FS, design support - Capacity building & institutional strengthening	- Troubleshooting and Just-in-Time TA - Policy & technical expert dispatch - Continued capacity building support - Stakeholder coordination support	- Continued advisory support - Facilitate continued knowledge exchange with city networks and SMG

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