Consultation on Developing ICT Infrastructure for Smart Cities in Peru

15 July 2014

KISDI KOREA INFORMATION SOCIETY DEVELOPMENT INSTITUTE

Peru-Korea Workshop on Smart City

Case of Smart Cities about Transportation:

Intelligent Transport System

15 July 2014

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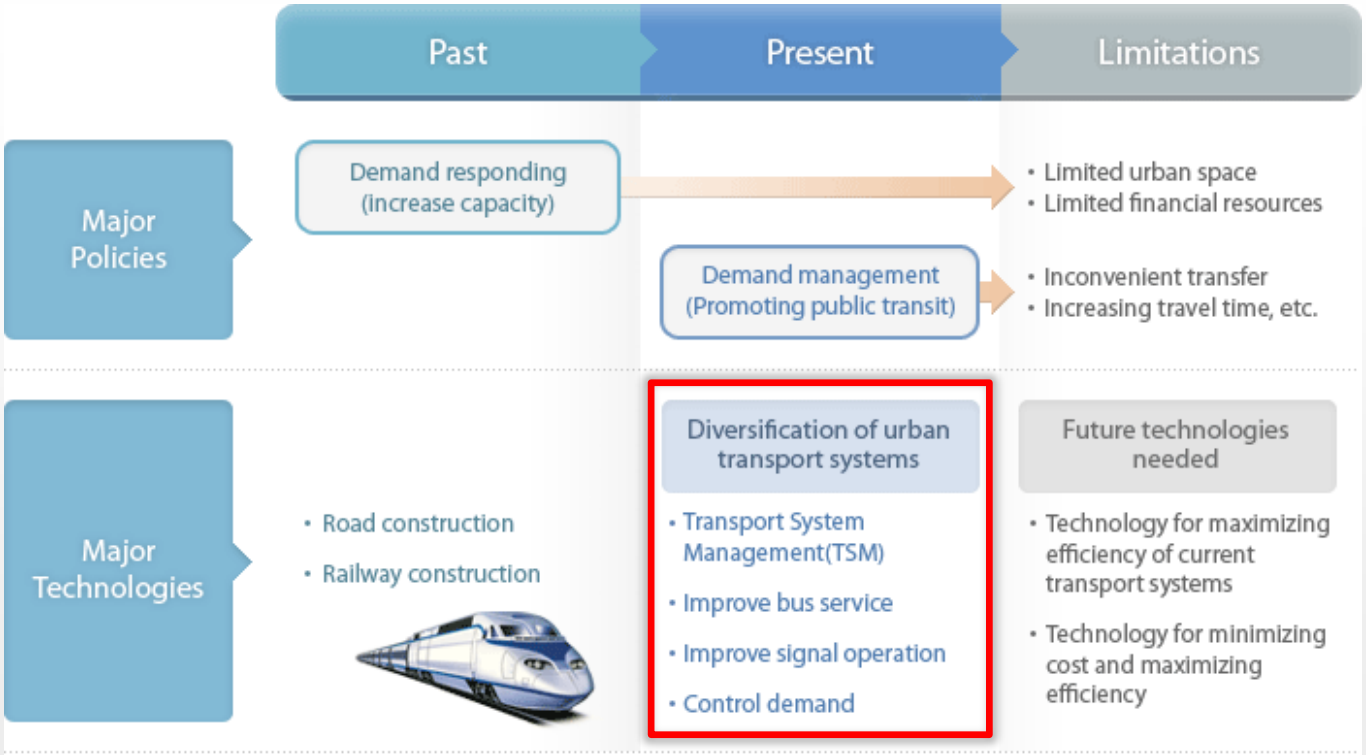
Backgrounds > Urbanization Needs

ITS can satisfy the demands of urban transport systems

Backgrounds

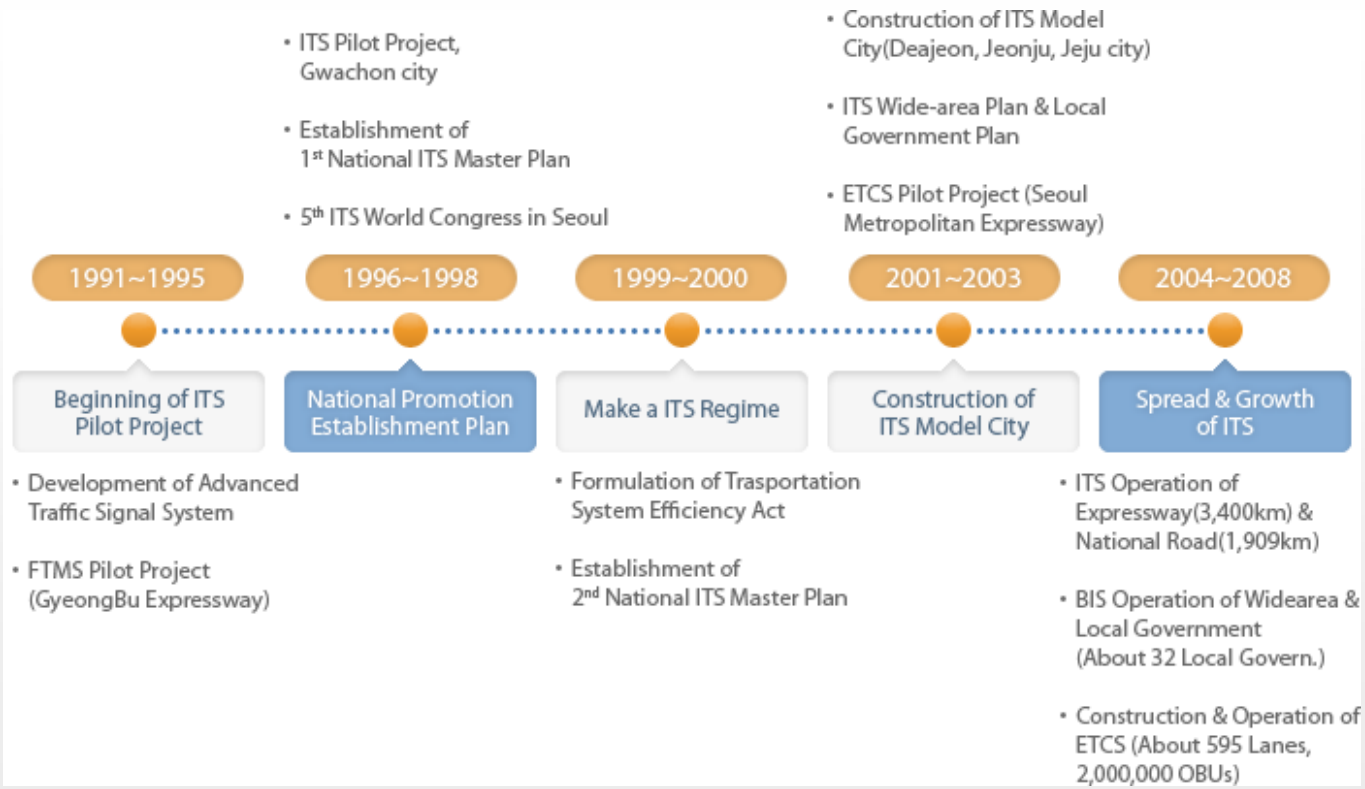


※ *National Transport Information Center(NTIS), Korea*

Backgrounds > Milestone

Korea has developed ITS since 1991

ITS Milestone in Korea



※ *National Transport Information Center(NTIS), Korea*

Backgrounds > Smart City Service View

ITS service is one of the smart city public services

Smart City Service Classification(KISDI, 2010)

Public Service	Enterprise Service	Personal Service
▪ *Facility Management* *Dangerous Substances, Water Service, Sewerage*	▪ *e-Commerce* *Manufacturing Automation, Processing Control*	▪ *Housing Complex* *Advanced Metering Infrastructure, Safeguard*
▪ *Public Safety* *Regional Safeguard, Fire Prevention, Emergency Call*	▪ *Telecommunication/Broadcasting* *e-Book, WiBro(WiMAX), DMB*	▪ *Home* *Mobile Home Control*
▪ *Transportation* *ITS, Illegal Parking, Accident Processing*	▪ *Finance/Insurance* *u-Payment, e-Payment, Internet Banking*	▪ *Health/Welfare* *Health Monitoring, Consulting*
▪ *Environment* *Weather Info, Disaster Warning, Watching Pollution*	▪ *Logistics* *Warehouse, RFID*	▪ *Education* *Online Lectures*
▪ *Civil Service* *Certificate Issuing, Civil Support*	▪ *Information Providing* *Information Web Portal*	▪ *Culture/Entertainment* *Events Info, Reservation*
	▪ *Transportation* *Traffic Info, Road Management Automation, Fare Collection*	▪ *Tour* *Tourism Info, Reservation, Cashless Shopping*

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02

ITS Definition > Definition

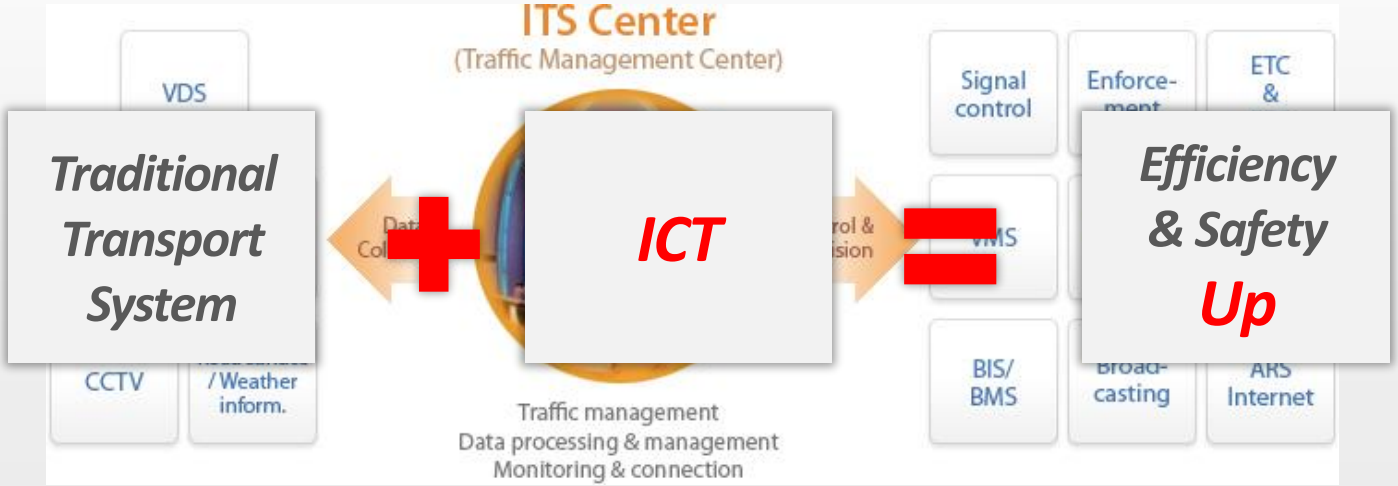
Definition and its aim

[Definition]

*The transport system of **providing** and **utilizing** transport **information** & **service** by connecting **electromagnetic control** & **communication** to transportation system and equipment.*

[Aim]

Systematize** and **automate** the operation and management of transport system and improve transport **efficiency** and **safety.



※ *National Transport Information Center(NTIS), Korea*

ITS Definition > Service Classification >> High Level

ITS has many services and can be classified by various method

High Level Classification

Provided Services in Korea(Public Sector)

Advanced Traffic Management Service

- *Advance Traffic Management Systems(ATMS)*
- *Advanced Traffic Signal Control(ATC)*
- *Automatic Traffic Enforcement(ATE)*
- *Parking and Bus Exclusive Lane Enforcement(PES)*
- *Parking Information Systems(PIS)*

Electronic Fare Payment Service

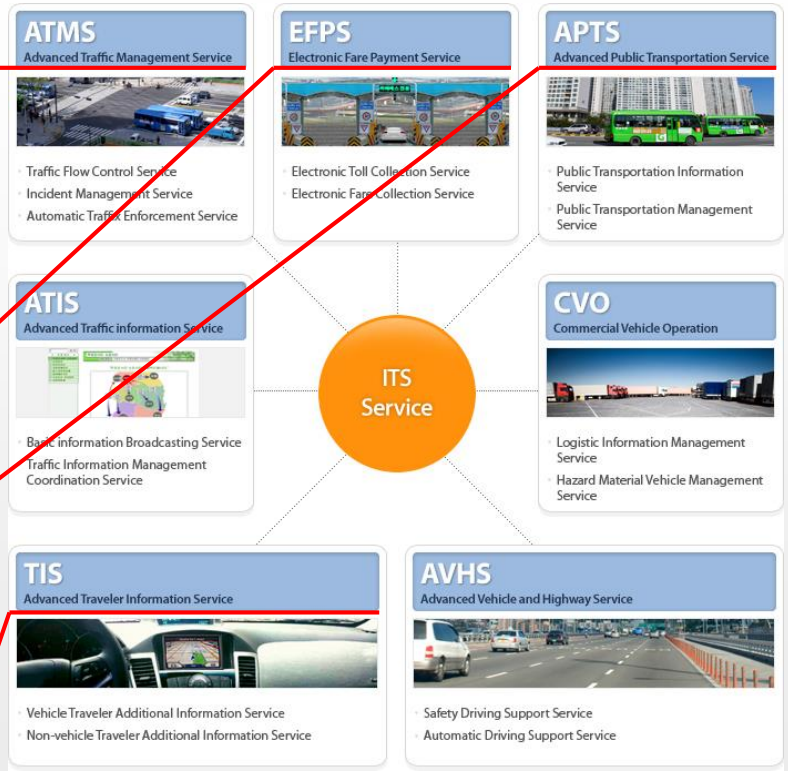
- *Electronic Toll Collection Service(ETCS)*
- *Electronic Fare Collection and Card(EFC)*

Advanced Public Transportation Service

- *Bus Information System(BIS)*
- */Bus Management System(BMS)*
- *Bus Rapid Transit(BRT)*

Advanced Traveler Information Service

- *Transport Advice on Going Anywhere(TAGO)*

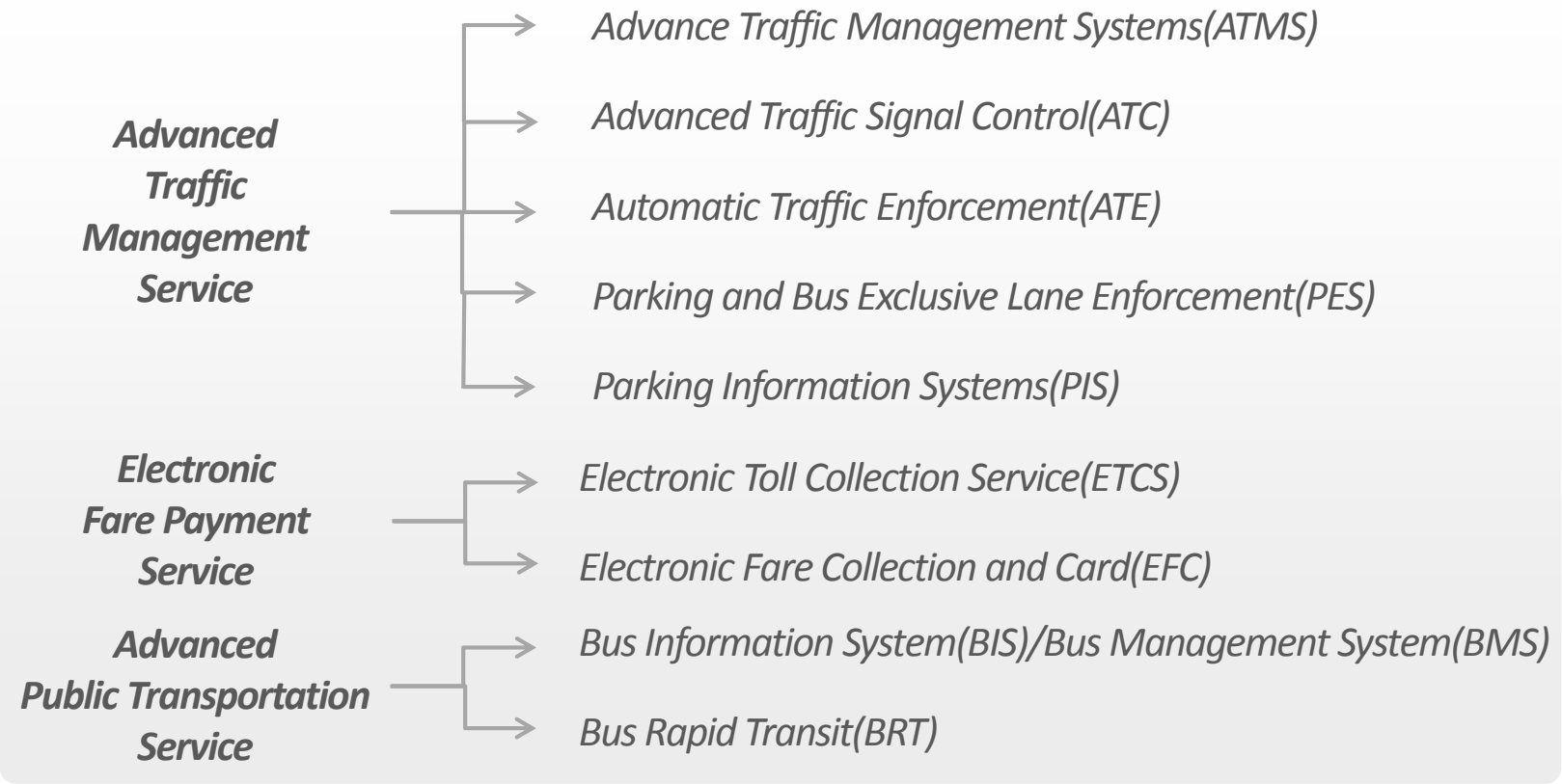


※ *National Transport Information Center(NTIS), Korea*

ITS Definition > Service Classification >> System Level

ITS has many services and can be classified by various method

System Level Classification



ITS Definition > Service Selection

Focus on what will be useful to improve your transport system's efficiency and safety

Investigation and analysis

- *Environment analysis*
- *Vision of city/community*
- *Priority of public policies*
- *Financial capacity*

What will be the best service?(5-point scale)

Traffic management optimization 4.04

Promotion of traffic information distributio 3.89

Public transport management 3.85

Electronic payment processing 3.73

※ KISDI, Korea(2010):
Public interest, economics, expandability and connectivity

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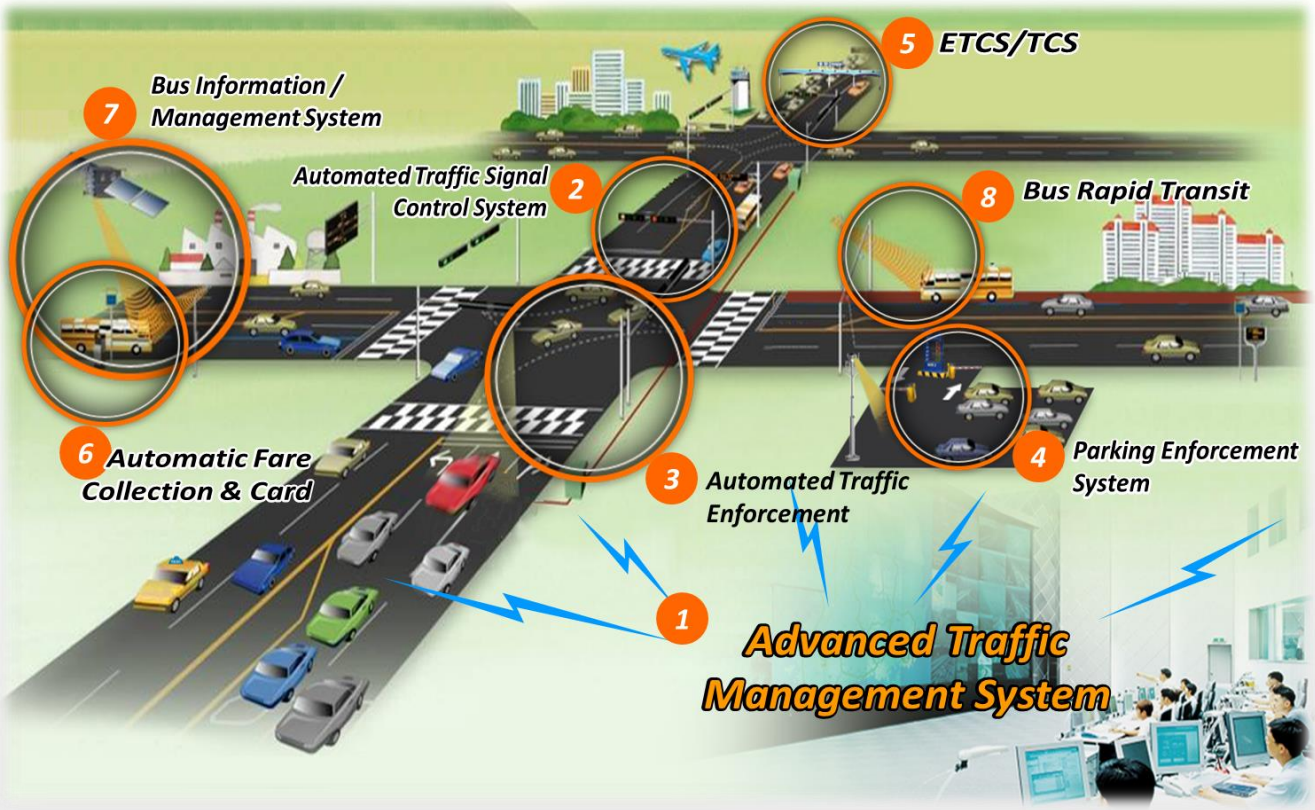
ITS Services > Advanced Traffic Management System(ATMS)

ATMS means ATMS itself or the integration of ITS systems

The integration of ITS systems



ITS Services > Advanced Traffic Management System(ATMS)

ATMS means ATMS itself or the integration of ITS systems

Data Collection

CCTV

From police

Unmanned cameras

From users

Loop detector

VDS*

Data Processing & Monitoring

Traffic Information Management

Traffic Information Center

Information Provision / Action

Internet

VMS

Emergency management

Traffic management

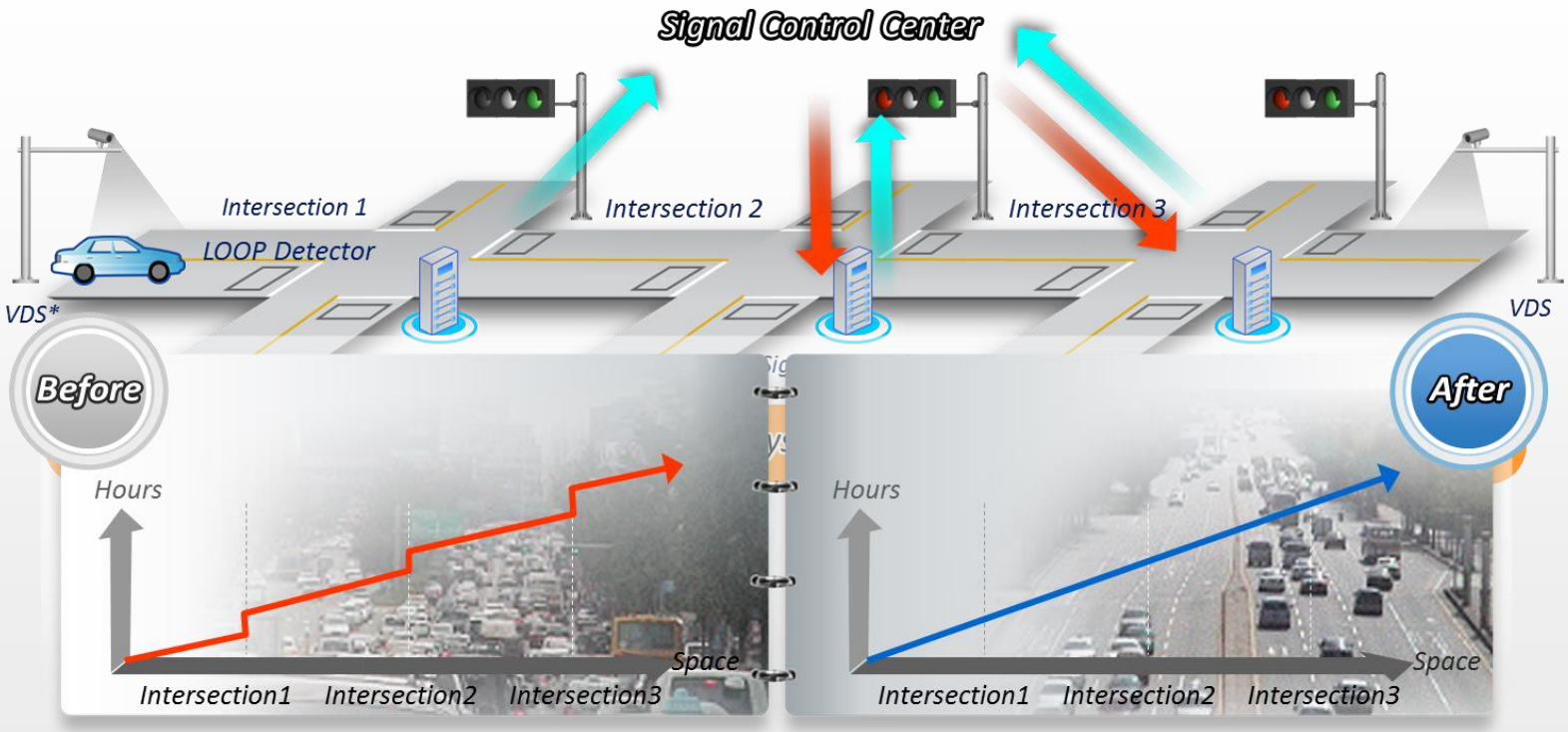
Parking availability info

Traffic signal controls

* VDS: Vehicle Detection System

ITS Services > Advanced Traffic Signal Control(ATC)

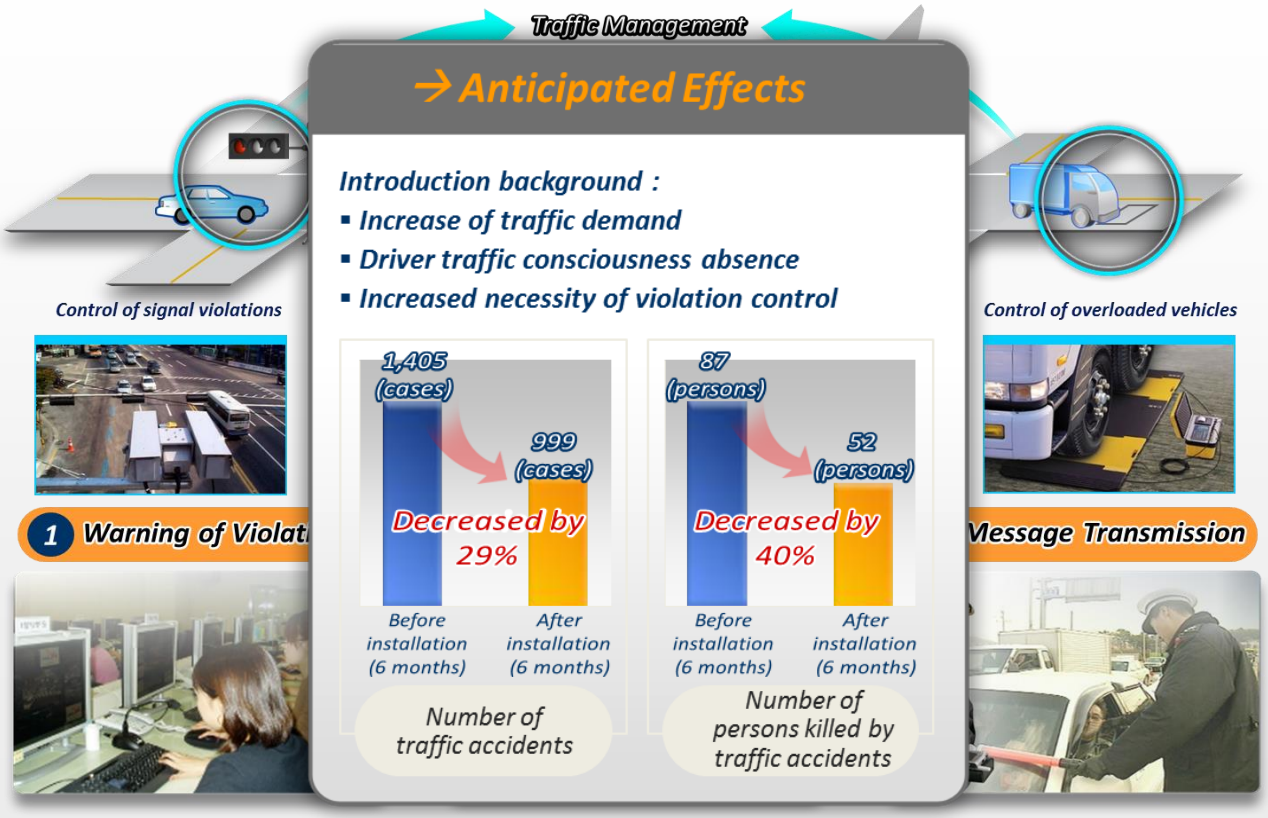
System flow and anticipated effects



※ VDS: Vehicle Detection System

ITS Services > Automatic Traffic Enforcement(ATE)

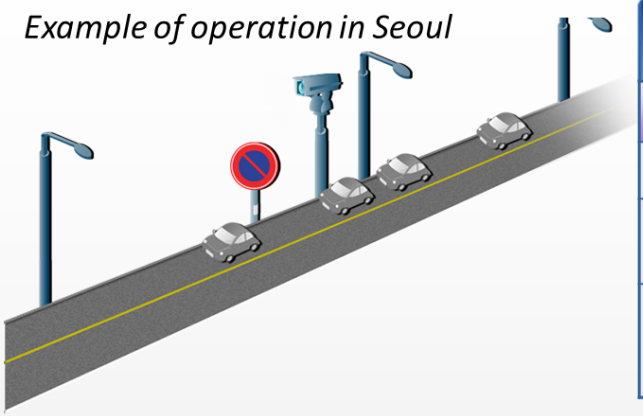
System flow and anticipated effects



ITS Services > Parking and Bus Exclusive Lane Enforcement(PES)

System flow and an example in Seoul

Example of operation in Seoul



Operation of automatic enforcement

	Parking Violation	Bus-Exclusive Lanes
Equipped areas	107	57
Violation criteria	Parks for more than 5 minutes at no parking area	Used by 35-passenger capacity or smaller vehicles
Enforcement hours	07:00 ~ 22:00	07:00 ~ 21:00

1 Warning of illegal parking & stopping

2 Remote Enforcement

3 Message Transmission

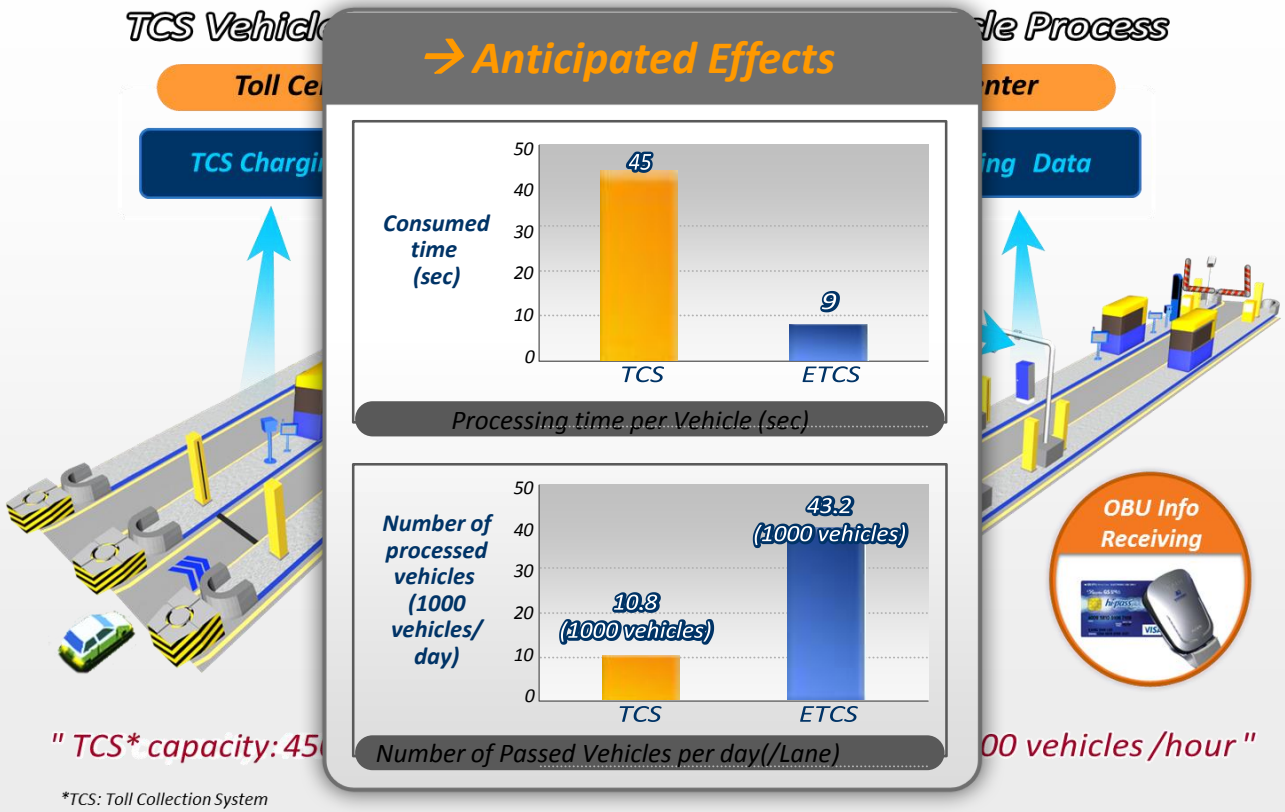
ITS Services > Parking Information System(PIS)

System flow and anticipated effects

※ *National Transport Information Center(NTIS), Korea*

ITS Services > Electronic Toll Collection Service(ETCS)

System flow and anticipated effects

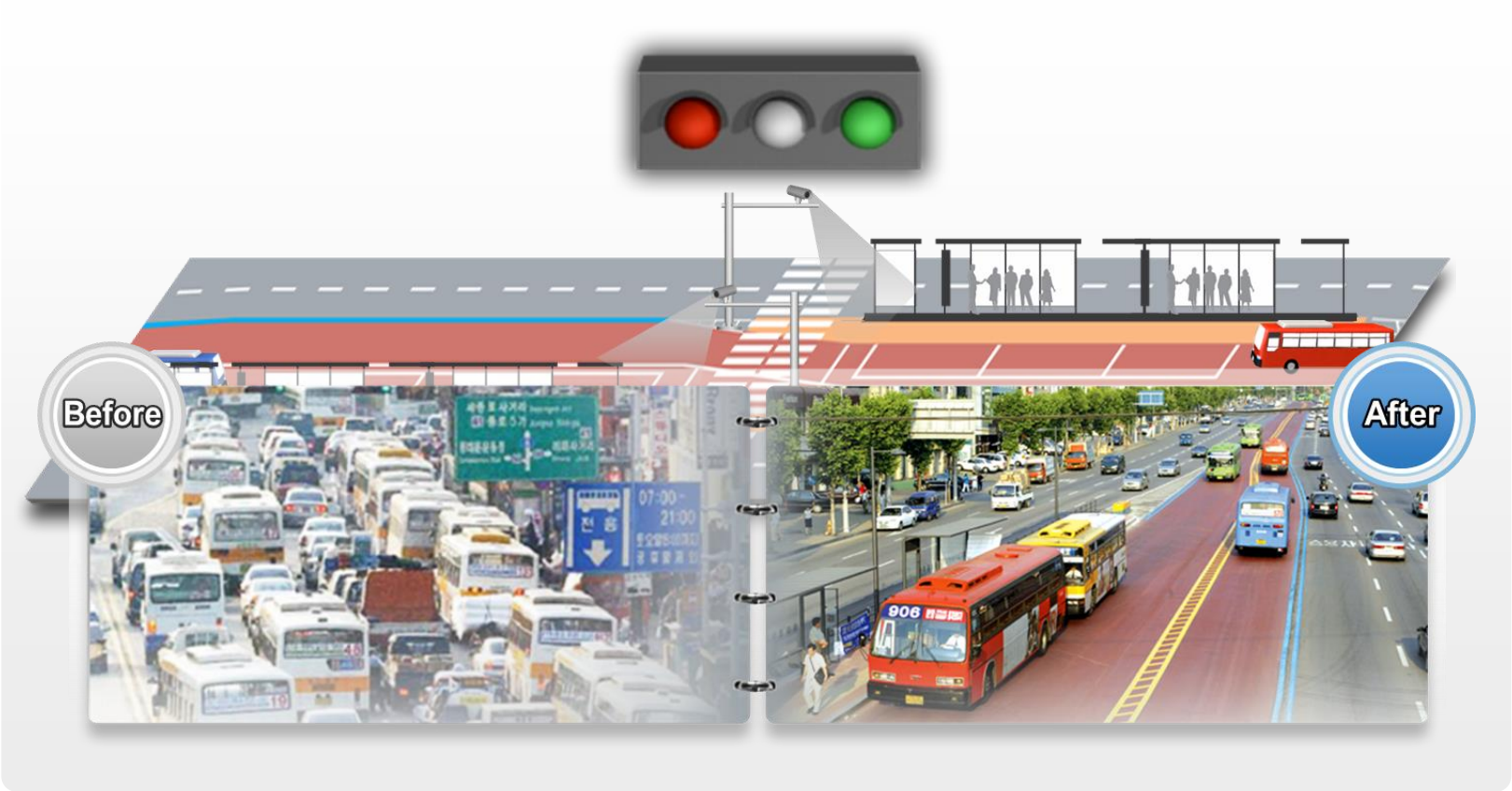


ITS Services > Electronic Fare Collection and Card(EFC)

System flow and anticipated effects

ITS Services > Bus Rapid Transit(BRT)

System flow and anticipated effects



ITS Services > Automatic Incident Detector(AID)

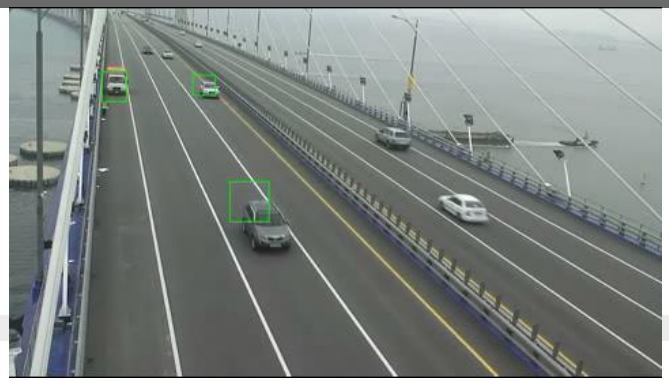
Movie clips demonstrating AID's functions

Car breakdown on a road

Driving the wrong way on a road

Fallen object on a road

Pedestrian on a road



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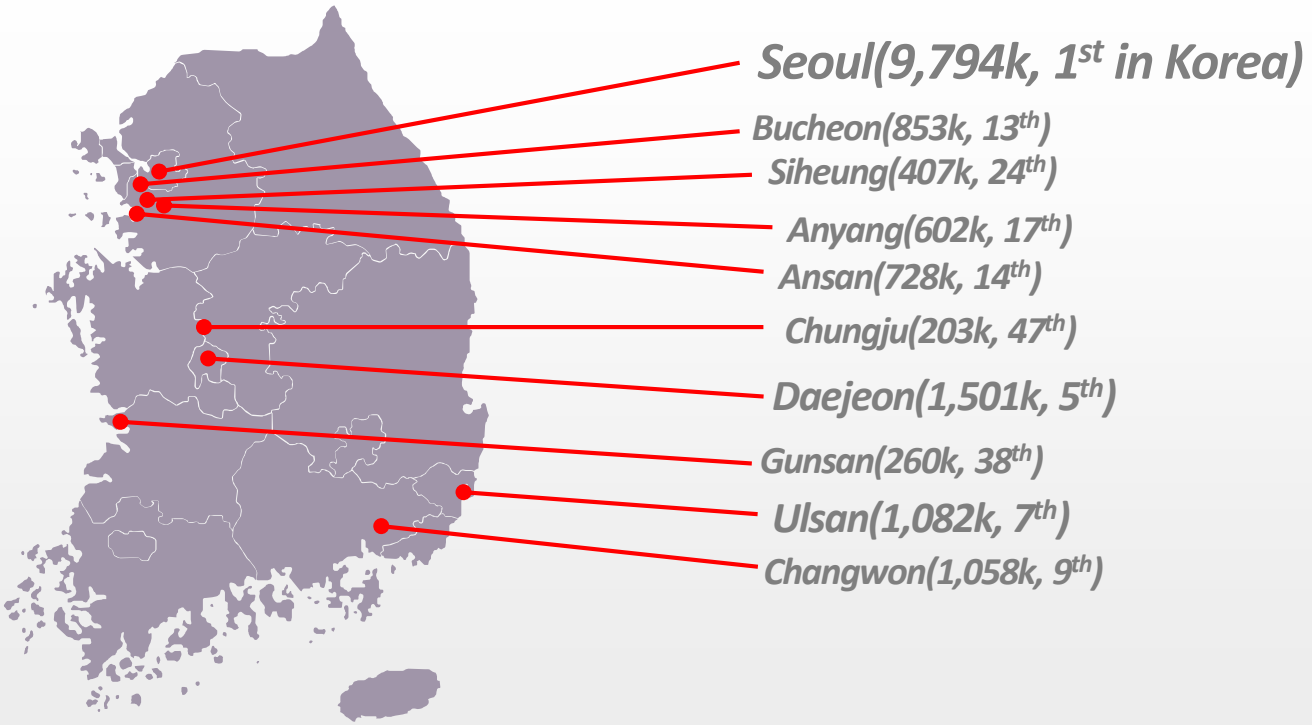
Case Studies > Location

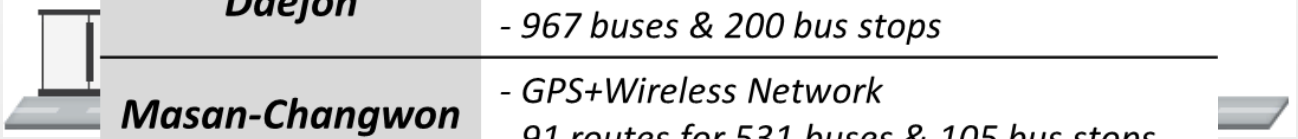
Geographic information



※ *Population: KOrean Statistical Information Service(KOSIS), 2010*

Case Studies > Wide-Area BIS Projects

Service concept & success case in Korea

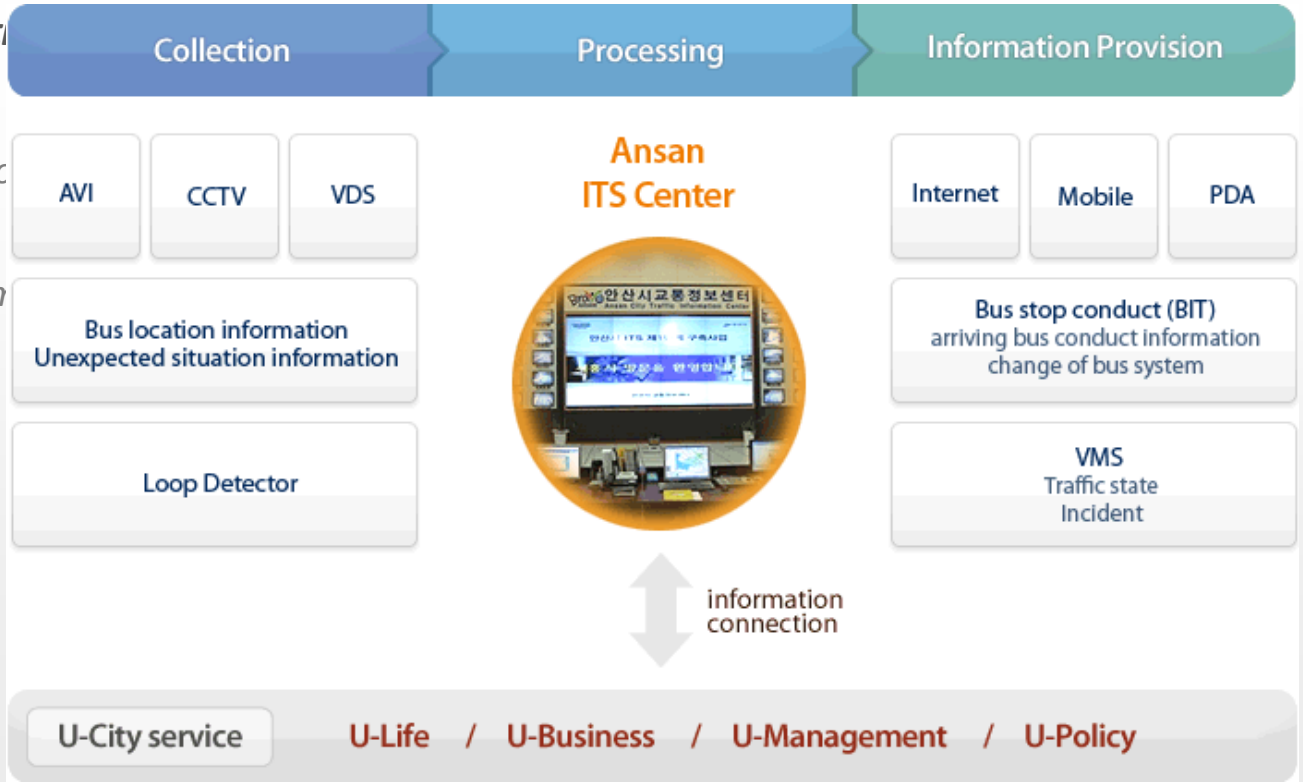


Seoul	- GPS+Wireless Network - All route for 7,573 buses
Siheung	- Beacon/GPS+CDMA - All route & 94 bus stops
Gunsan	- GPS+Beacon+CDMA - All route for 133 buses & 40 bus stops
Daejon-Cheongju	- GPS+DSRC & GPS+Wireless Comm. - 386 buses, 172 bus stops
Daejon	- DSRC - 967 buses & 200 bus stops
Masan-Changwon	- GPS+Wireless Network - 91 routes for 531 buses & 105 bus stops
Ulsan	- GPS+Wireless Network - 76 routes

Case Studies > Ansan City

Characteristic of city and System adopted

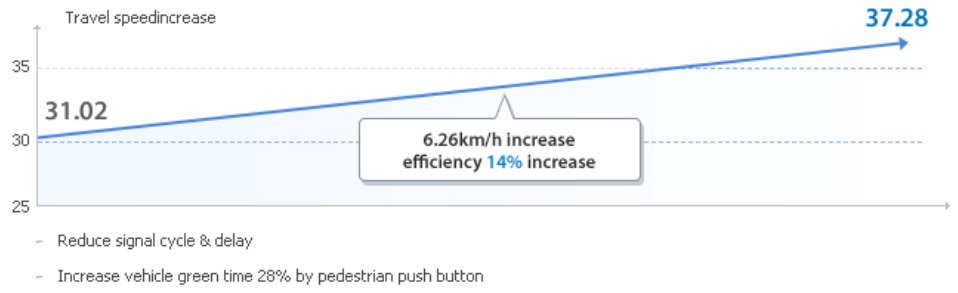
- ***Characteristi***
  - *Dynapolis*
  - *Connection to*
  - *The zone has*
  - *Industrial con*



Case Studies > Ansan City >> Benefits

Detailed benefits

Improving efficiency of Traffic Management



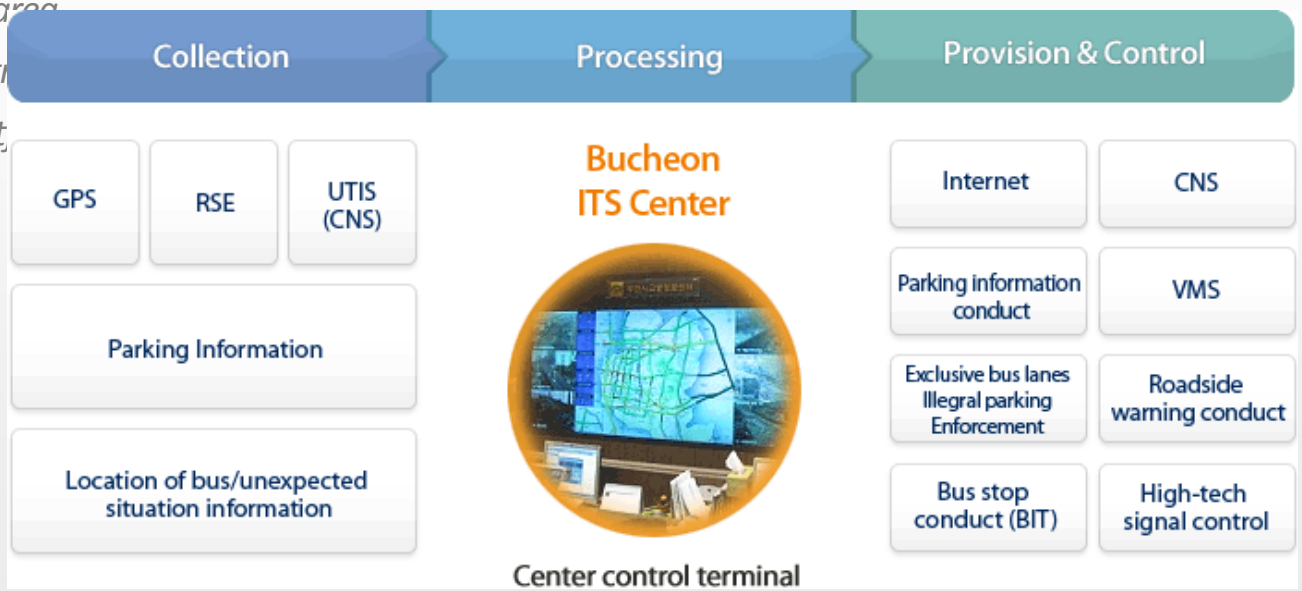
Reduce Traffic accident by Automatic Enforcement System

Case Studies > Bucheon City

Characteristic of city, system adopted and benefit

- ***Characteristic of city***
  - *Dualistic city*
  - *Residential area*
  - *Increase in tr*
  - *Inflow & out*

Car Speed increase by 5 percent



Case Studies > Chungju City

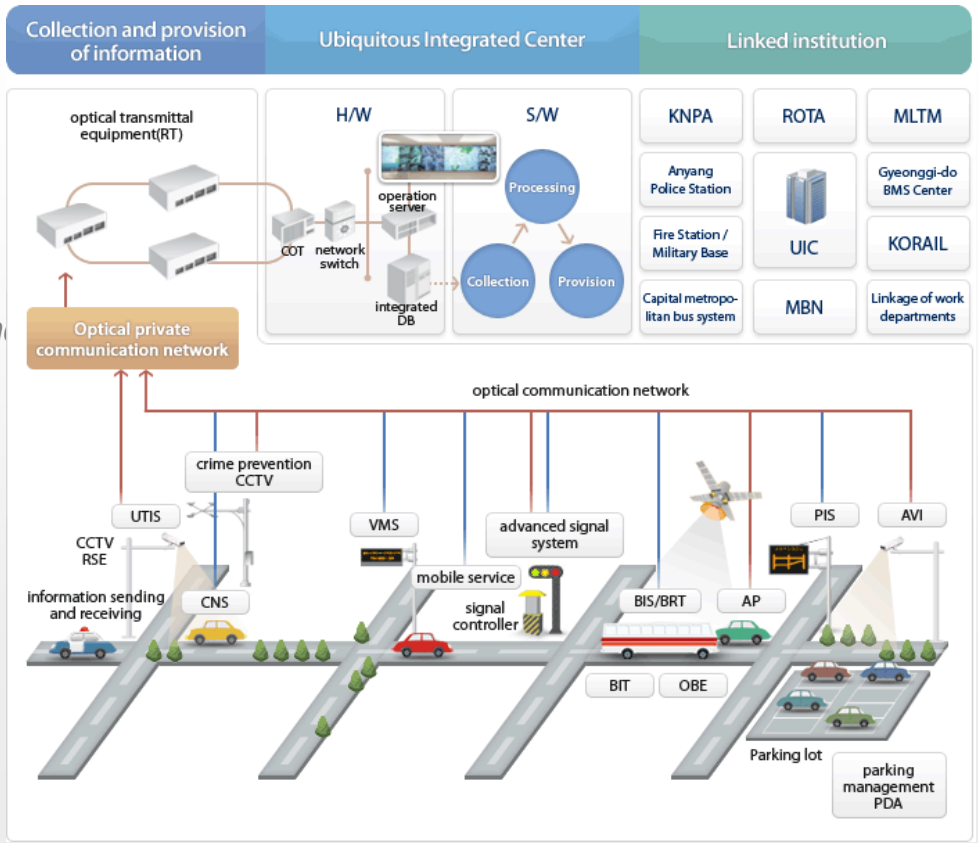
Characteristic of city, system adopted and benefits

- ***Characteristic of city***
  - *Urban-rural*
  - *Deep fog by*
  - *Famous for s*

Case Studies > Anyang City

Characteristic of city and system configuration

- ***Characteristic of city***
  - *Dynapolis*
  - *Connection to Seoul by Subway*
  - *Lots of commuting cars around*
  - *Venture valley & high-tech future in*

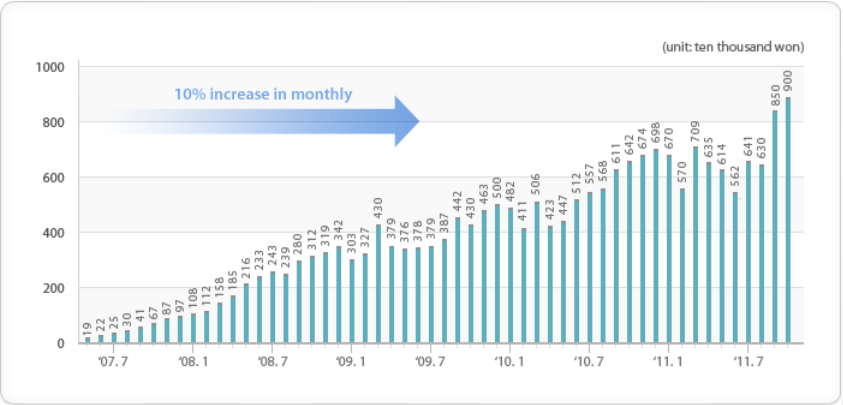


Case Studies > Anyang City >> Benefits

Detailed benefits

- *The trend of using bus information*

10% increase/monthly

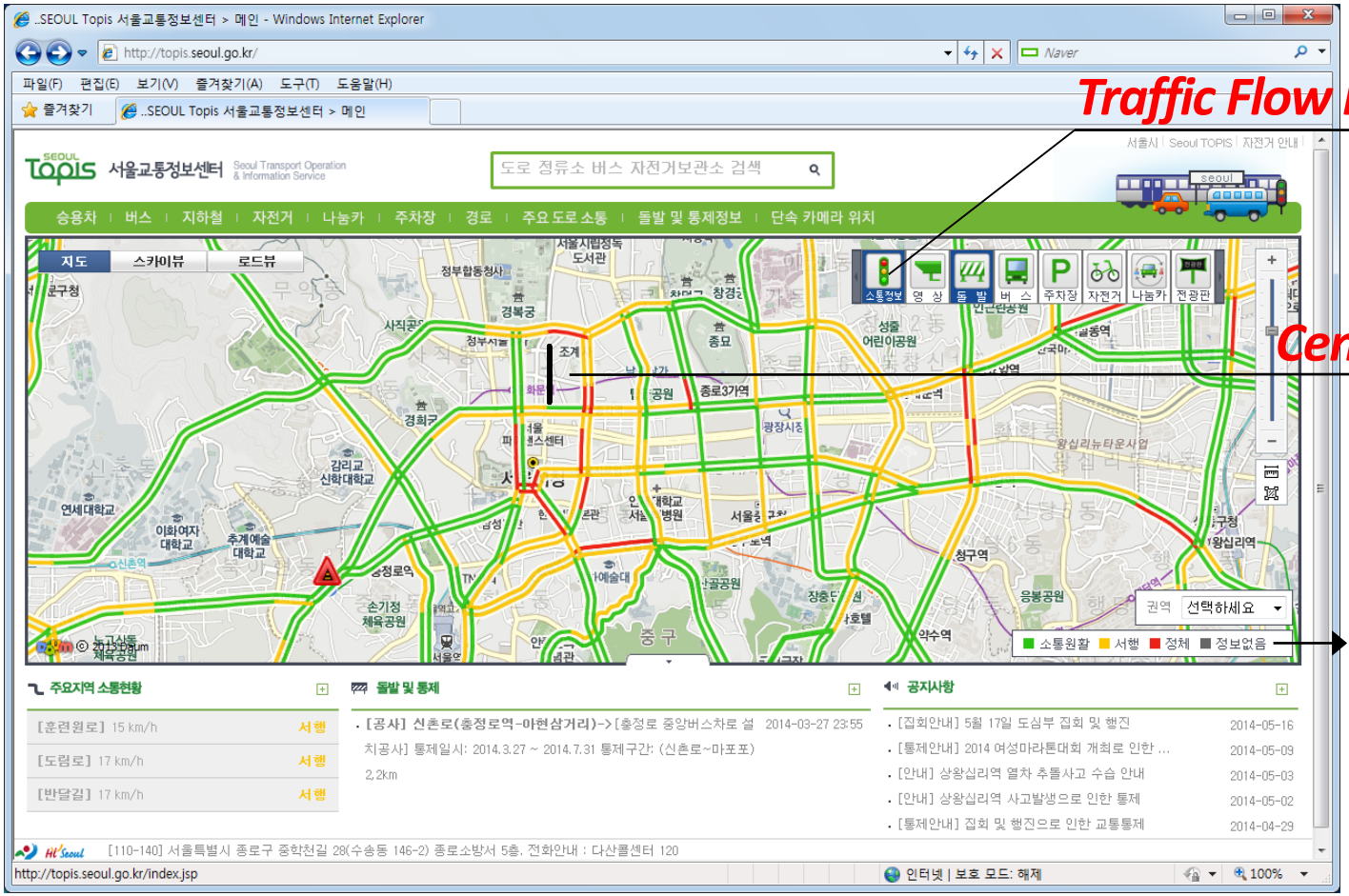


- *Average travel time before/after ITS*

10.2% improvement

Case Studies > Seoul TOPIS >> Traffic Information

http://topis.seoul.go.kr



Traffic Flow Information

Center Location

Legendary>

Good

Slow

Traffic Jam

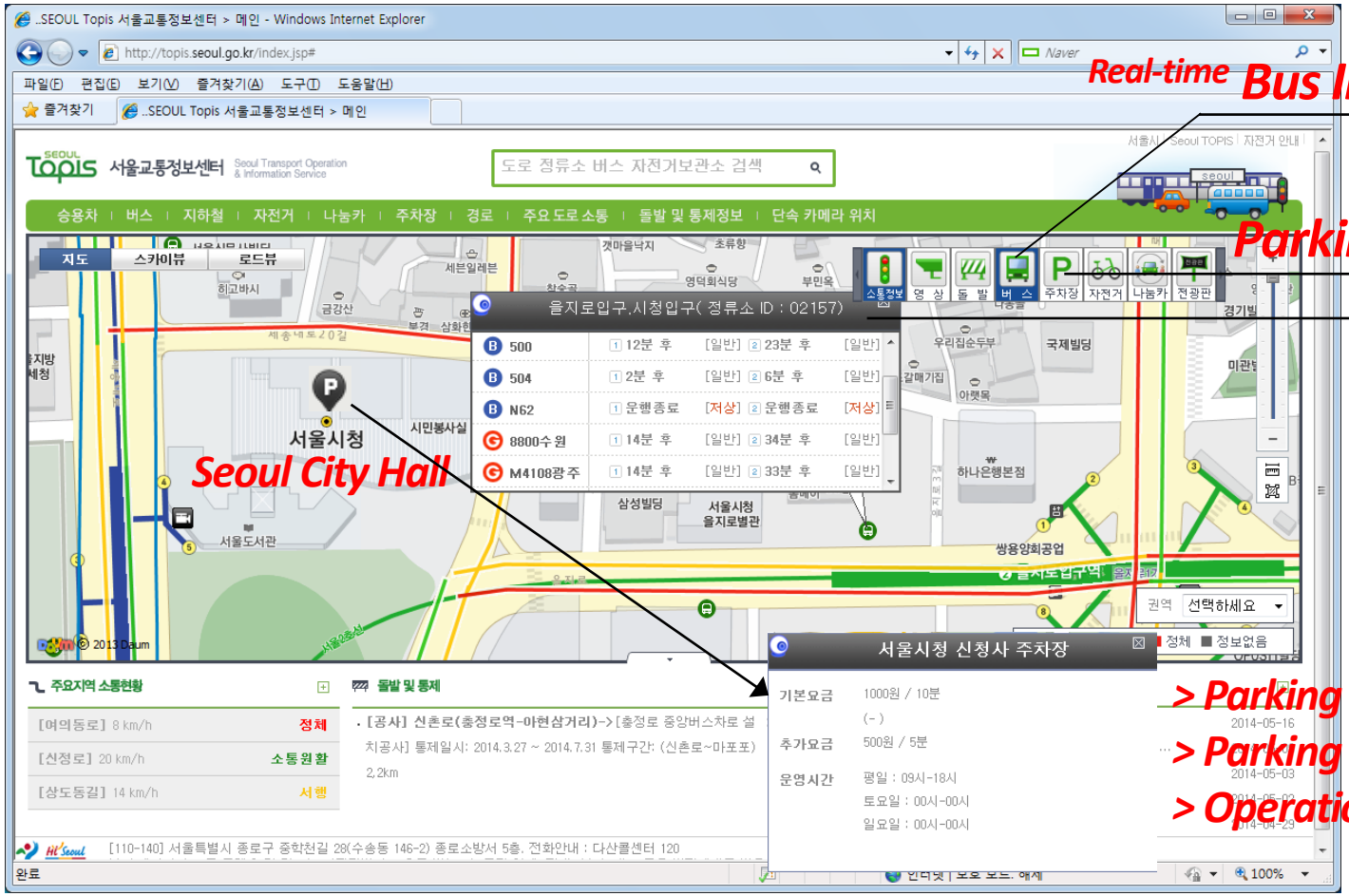
No Info.

Case Studies > Seoul TOPIS >> Real-time CCTV

http://topis.seoul.go.kr

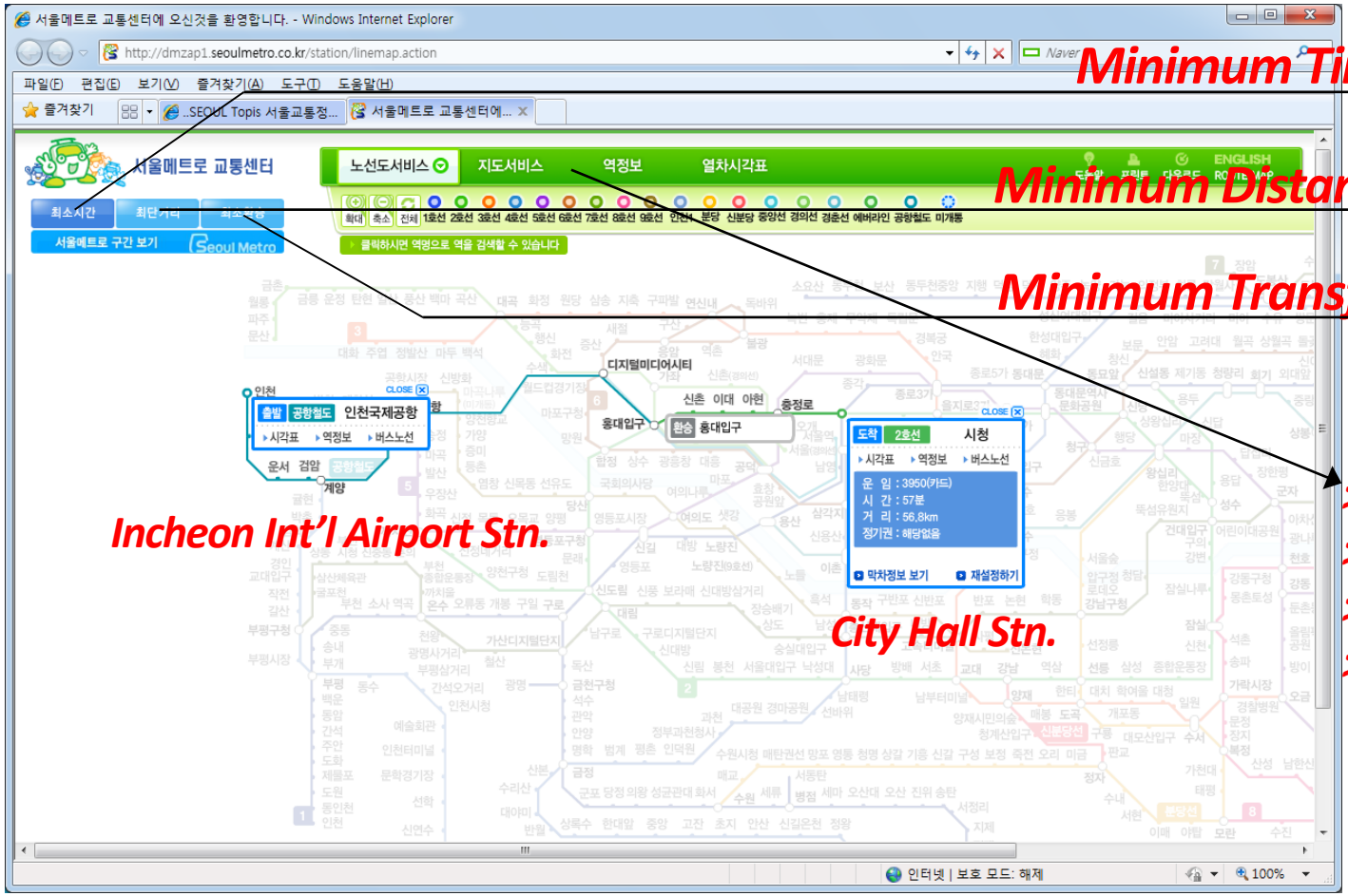
Case Studies > Seoul TOPIS >> BIS & PIS

http://topis.seoul.go.kr



Case Studies > Seoul TOPIS >> Route Advisory Service

http://topis.seoul.go.kr



THANK YOU

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