Current status of ITS in Korea

2017.6

ITS KOREA
Intelligent Transport Society of Korea

Contents

- Prologue
- ICS: Integrated Control System
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- e-Call System
- Epilogue

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Chronology of ITS

1991~1998
ITS Pilot Project & Nat'l Promotion Establishment Plan

- Development of Advanced Traffic Signal System
- FTMS Pilot Project
- ITS Pilot Project, Gwachon City
- 1st National ITS Master Plan
- 5th ITS World Congress in Seoul

1999~2003
Enact ITS Legislation

- Transportation System Efficiency Act
- 2nd National ITS Master Plan
- Model Deployment of ITS Projects in 3 Cities
- ETCS Pilot Project

2004~2008
Spread & Growth of ITS

- ITS Operation on Expressway & National Highway
- BIS Operation in Metropolitan & Local Government
- Operation of ETCS

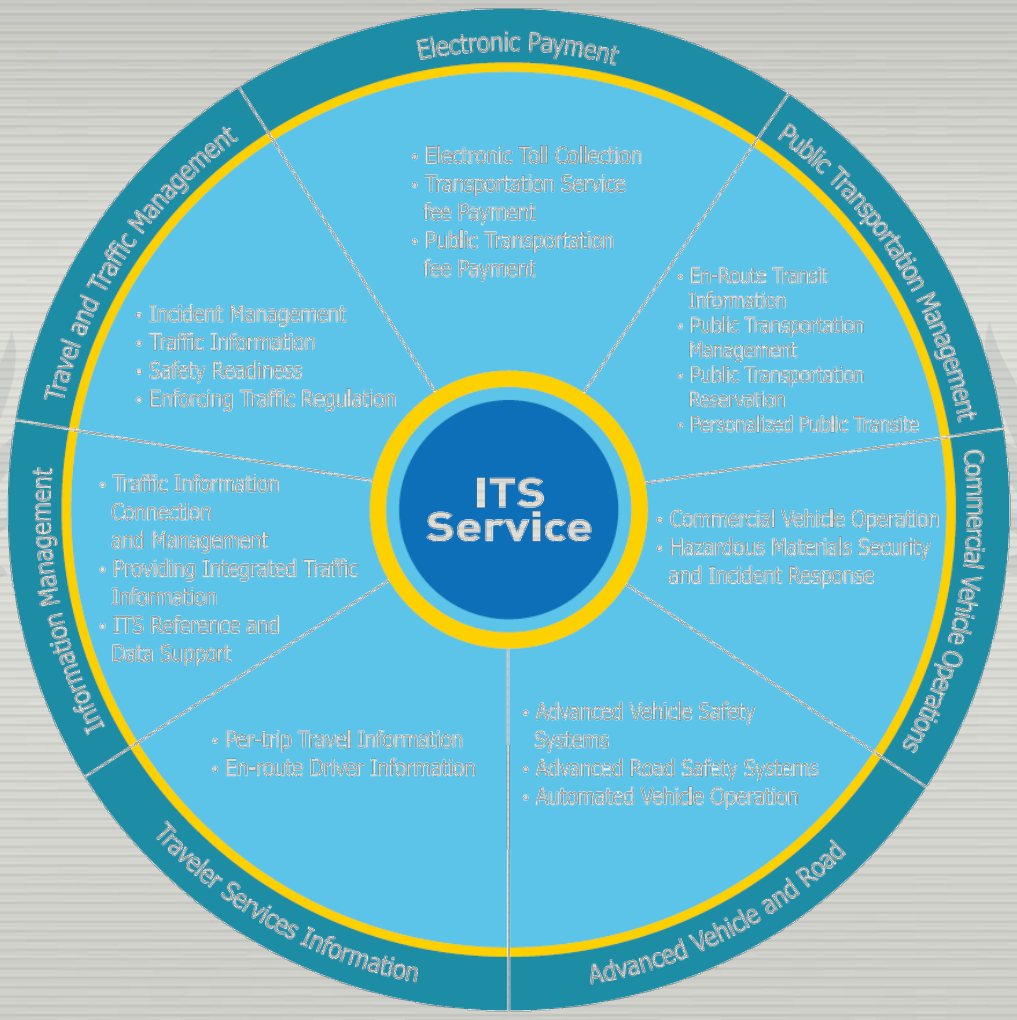
2009~2014
Next Generation New ITS

- 3rd National ITS Master Plan
- 17th ITS World Congress in Busan
- Smart Highway R&D Project Completion
- C-ITS Roadmap

2015~
Deployment of C-ITS

- ITS for Pyeongchang Winter Olympics
- C-ITS Pilot Project
- Cooperative Automated Roadway System R&D

ITS Service Area



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Need for New Paradigm

- Safety, Mobility, Convenience, Sustainability
- Improving Road Safety by V2V, V2I, and Vehicle and Person Communication
- New Paradigm for Intelligent Transport Systems

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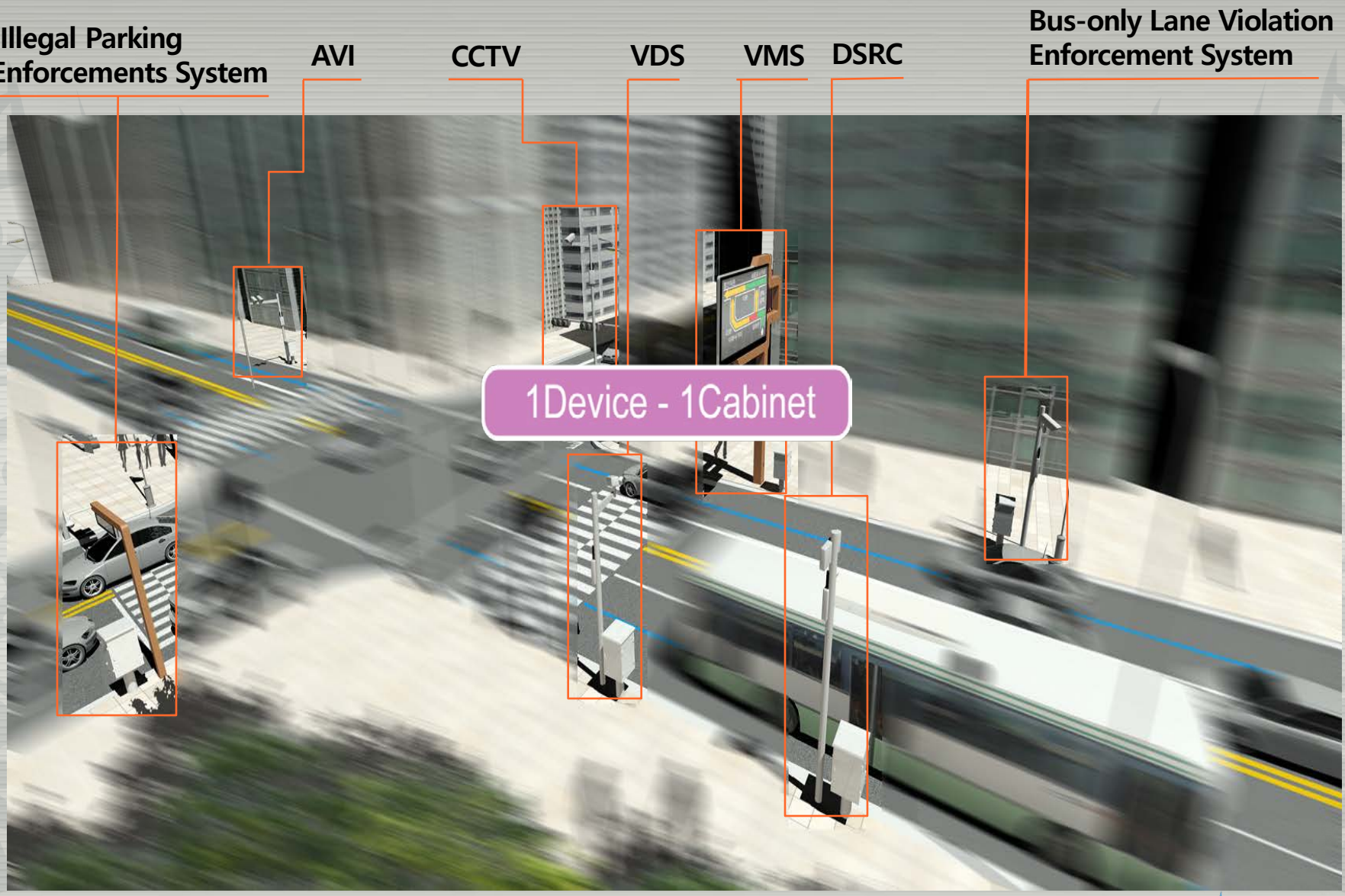
AS-is


Illegal Parking Enforcements System
AVI
CCTV
VDS
VMS
DSRC
Bus-only Lane Violation Enforcement System
1Device - 1Cabinet

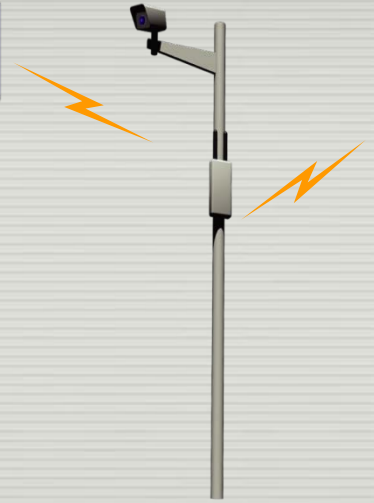
What is the ICS(Integrated Control System)?

Type of ICS

Basic-type

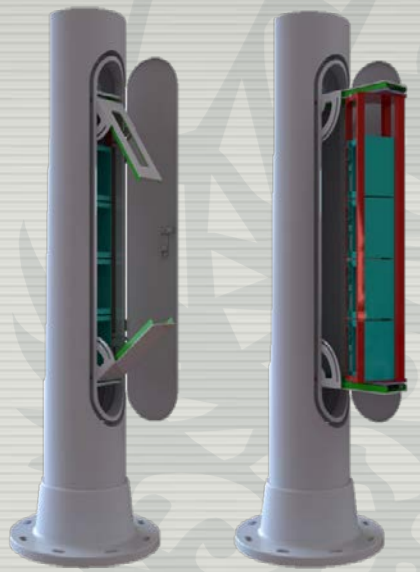
Slim-type

Smart-type
(Ultra-small)



All-in-one device

Smart-type
(LCD)



Pole embedded type

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Test-bed

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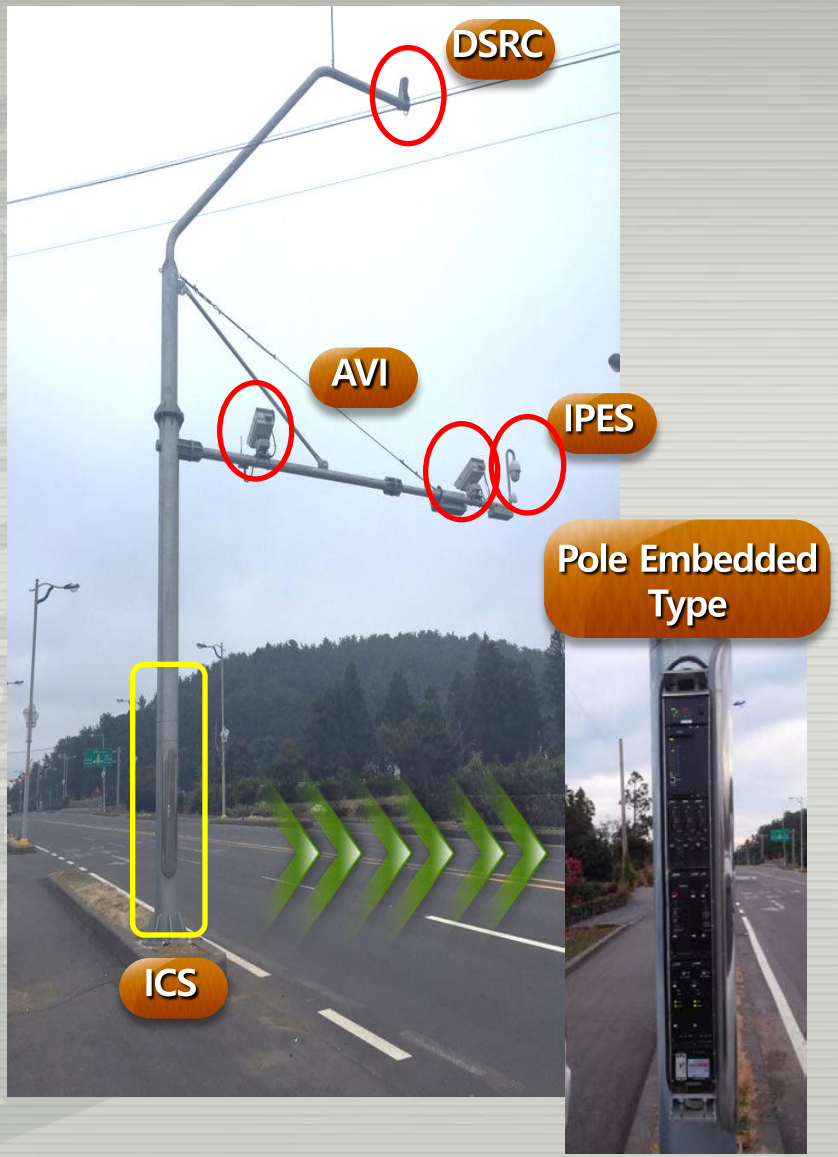
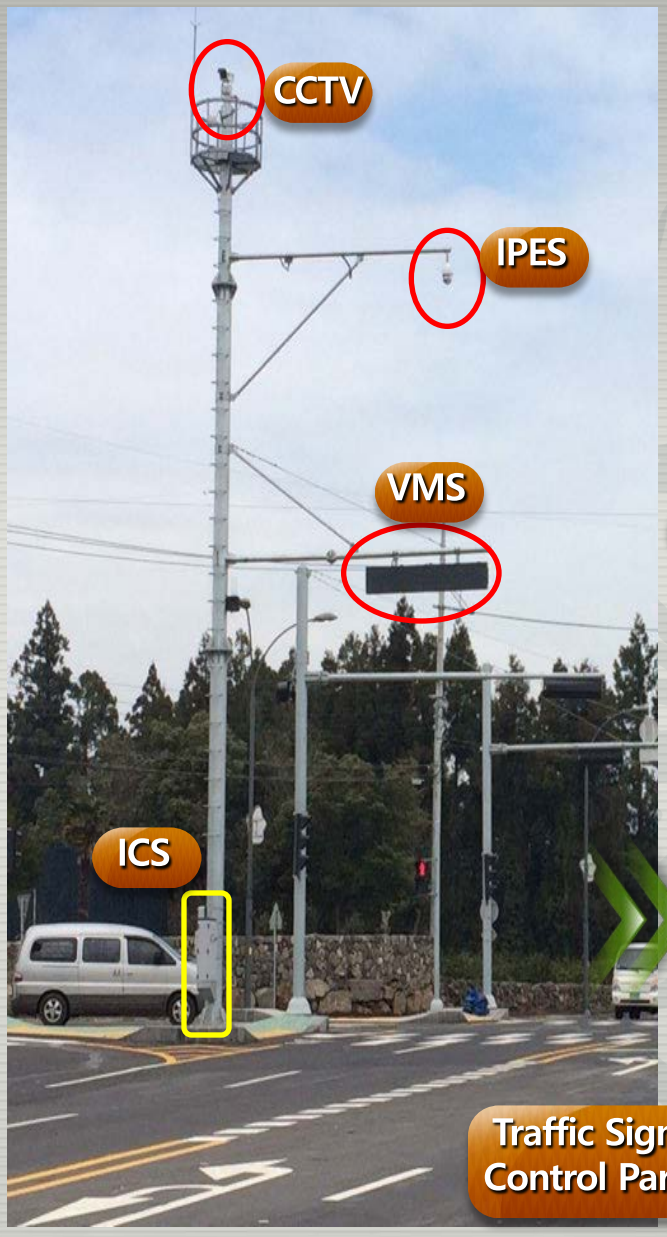
Test-bed





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S: Safe & Sustainable

M: Mobile

A: Advanced

R: Reliable

T: Tomorrow

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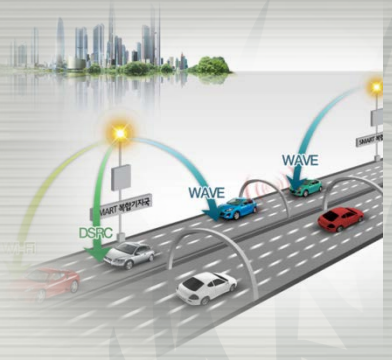
5 core Technologies

SMART Highway

WAVE Communication System



Complex Base Station

- WAVE, DSRC

Auto Detecting System

- By using Array camera & Radar sensor

Panorama Image Using Array Camera

Multi-Lane Based SMART Tolling Service

- By using the active DSRC

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Disseminating information on emergencies,
Preventing getting out of driving course
Real-time detection of road conditions
(road surface, falling object, etc.)

Multi Lane Tolling & Any Media Tolling

Single-Lane Tolling(Hi-Pass) ➔ Multi-Lane Tolling

- DSRC communication device
- Hi-Pass current devices available (9.6 million in use)

Any Media Tolling

- WAVE(IEEE 802.11p + 1609.x) communication device
- Smart phone tolling (Application)

WAVE Tolling terminal Smart phone tolling App.

V2X Communication Platform – RSE & OBE

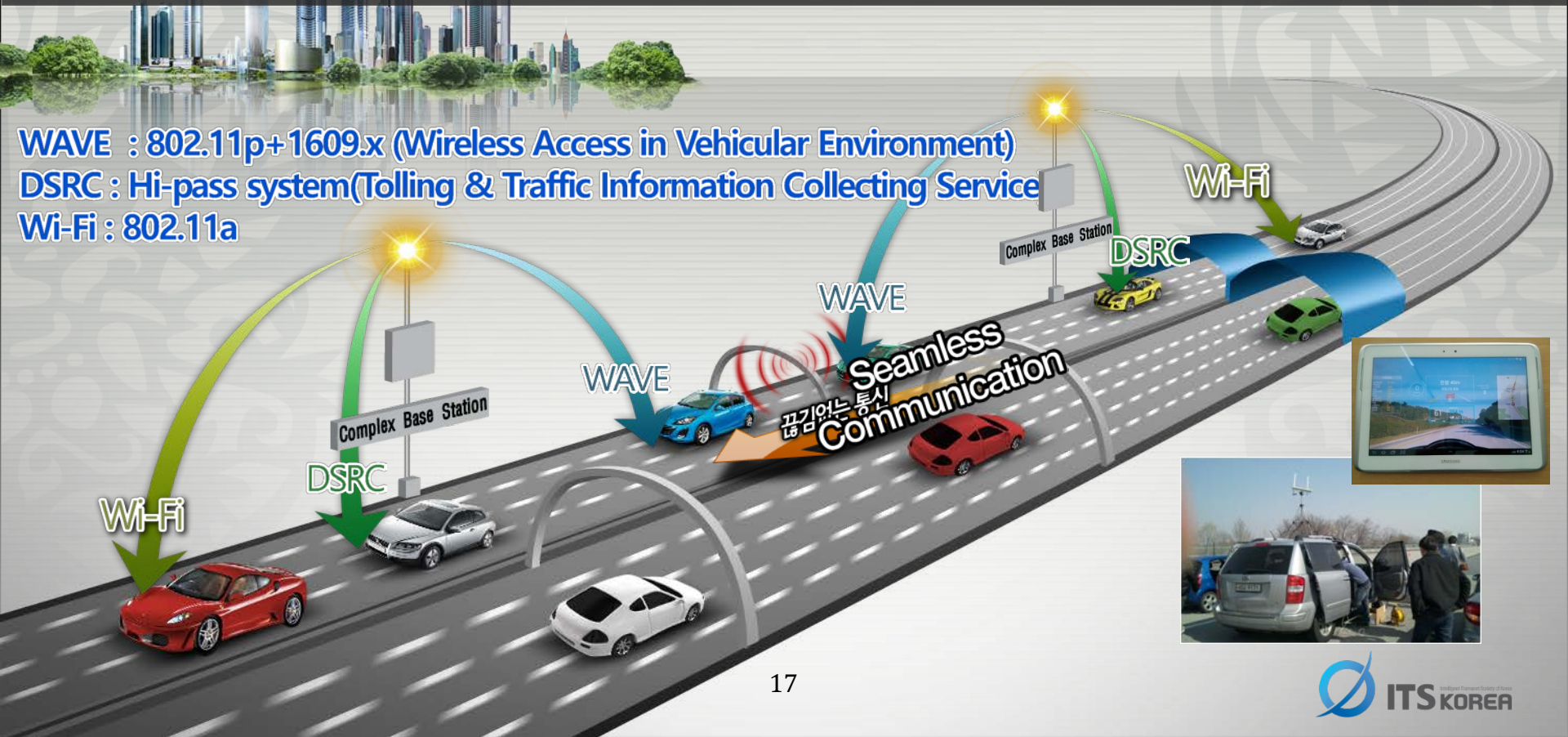
Multi-Purpose Base Station(RSE)
- Various wireless communication
- WAVE, DSRC, Wi-Fi

WAVE communication Device(OBE)
- Safety application & Tolling application

WAVE device

WAVE module

Complex base station



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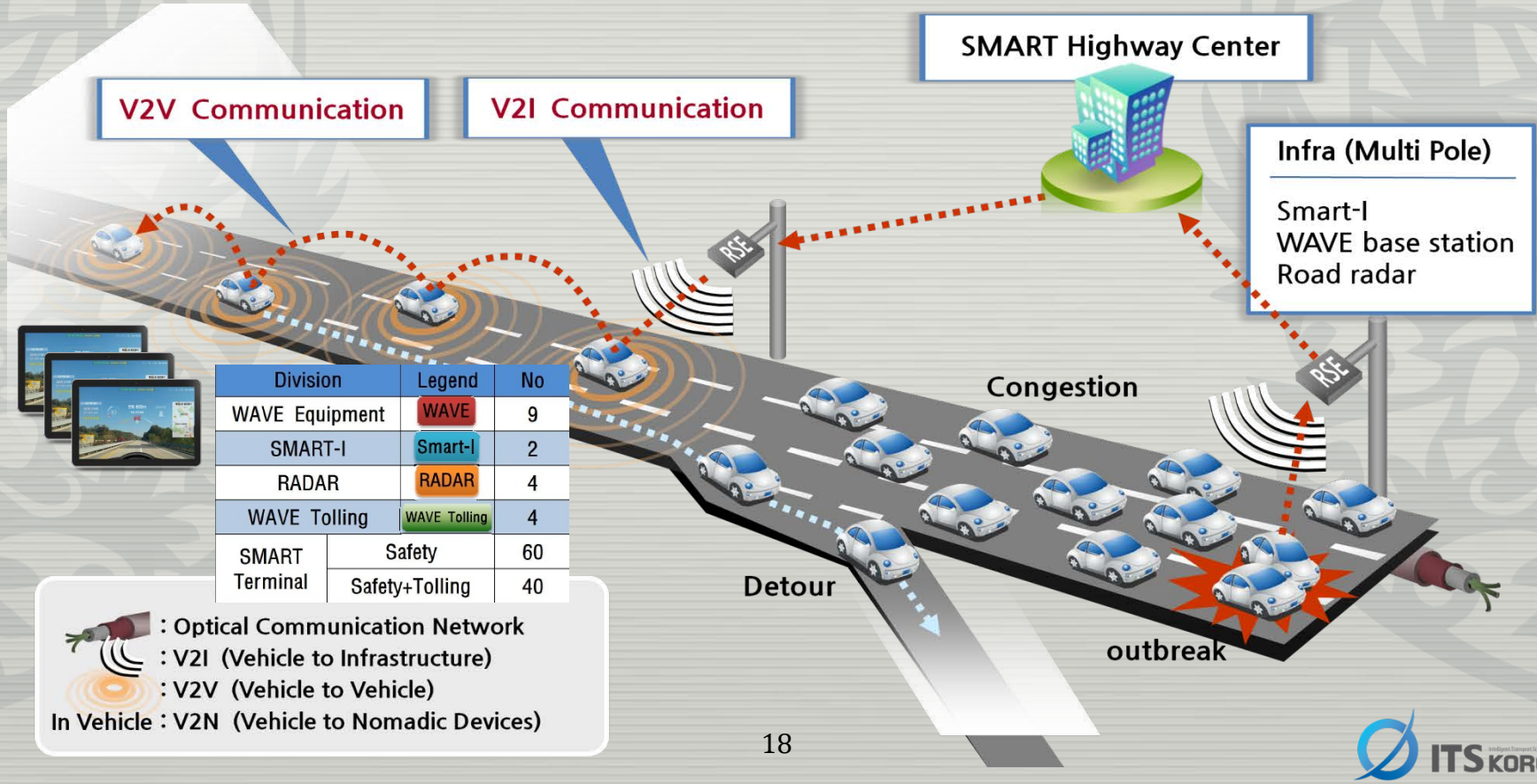
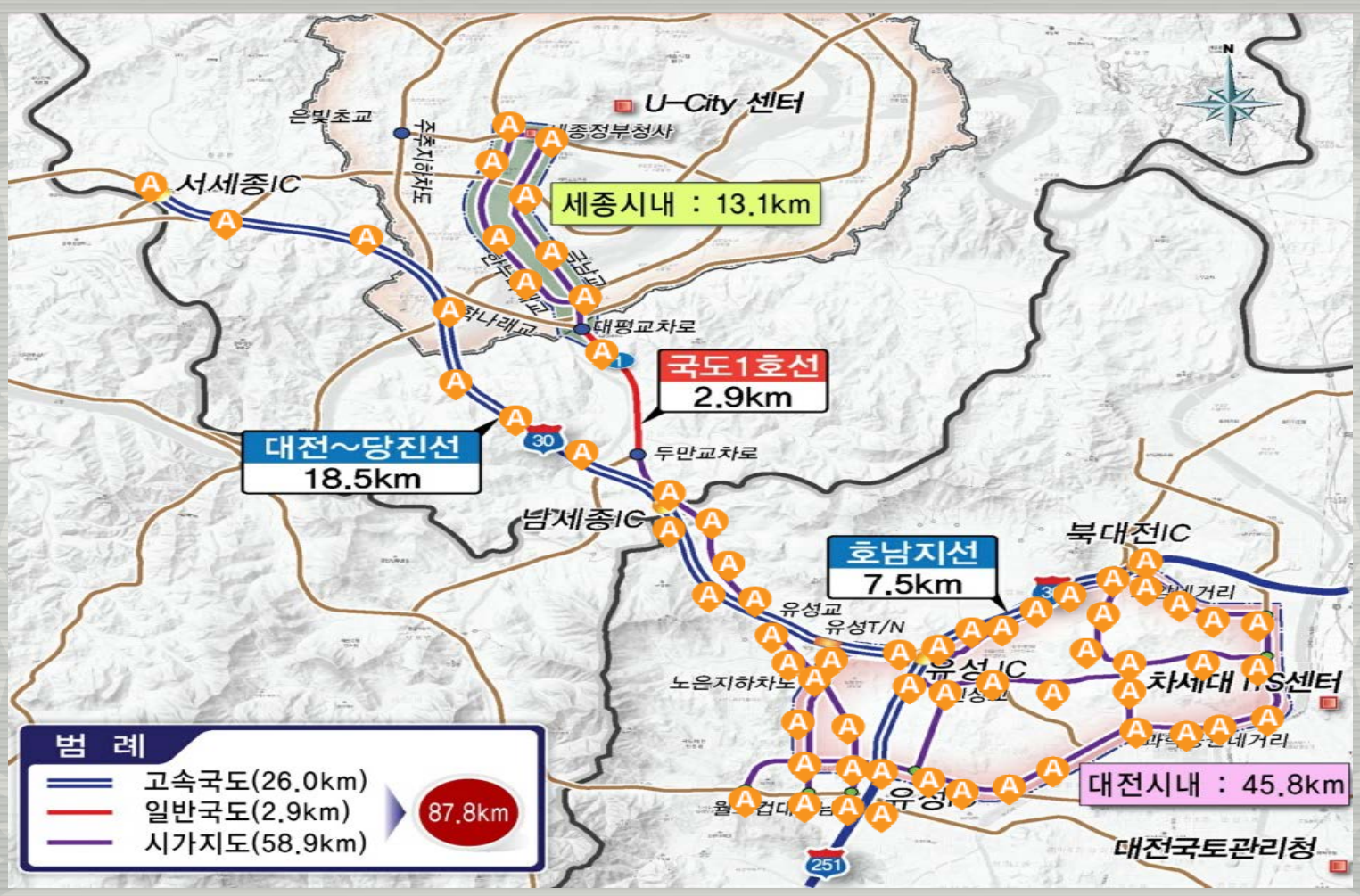
SMART Highway Field of Test: Kyung-Bu Expressway

Construction of SMART Highway Test bed

- Need to verify technology on real traffic circumstance
- Promotion of developed technology for commercialization
- Provide advertising site for **SEOUL World Road Congress i**
- Section : Kyung-Bu Expressway (Seoul TG ~ Suwon IC, 11km)



Cooperative ITS Pilot Project Site



Expected Benefits of Cooperative ITS

Accidents

181,391 (2011) → Reduced by 46% → 97,425 (2030)

Speed

20km/h (2011) → Increased by 30% (Urban) → 26km/h (2030)

Social Cost

USD 12.7 B (2011) → Reduced by 28% → USD 9.1 B (2030)

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C-ARS(Cooperative Automated driving Roadway System) in Korea

C-ARS (Cooperative Automated driving Roadway Systems) R&D Project

Task 1: Precision electronic map based LDM

Task 2: Hybrid V2X communication system

Task 3: Prototype vehicle
- road facility, complex positioning, and cooperative control evaluation

Task 4: Automated driving vehicles for demonstration and verification process

Task 5: Test-bed for smart road system for automated driving

C-ARS: Cooperative Automated driving Roadway Systems

Road Infrastructure (Task 1 & 5)

5 GPS
Local Receiving Station

5 Collection of
Traffic Information

1 Precision Electronic Map
Based Local Dynamic Map

5 GPS
Local Control Station

5 Operation Center

1 Road Facility

Linkage
(Task 2)

2 Hybrid
V2X
Communication System

Automated Cooperative Driving (Task 3 & 4)

4 Verification Process
Development

3 Prototype
Test
Vehicle

3 Vehicle Control

3 Complex
Positioning

Control of Automated
Cooperative Driving

3 Technology for Road
Facility Evaluation

3 Complex Positioning
Evaluation

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C-ARS: Cooperative Automated driving Roadway Systems

1 LDM (Local Dynamic Map)

- Incident
- Weather, Traffic
- Road Property
- Precision Map

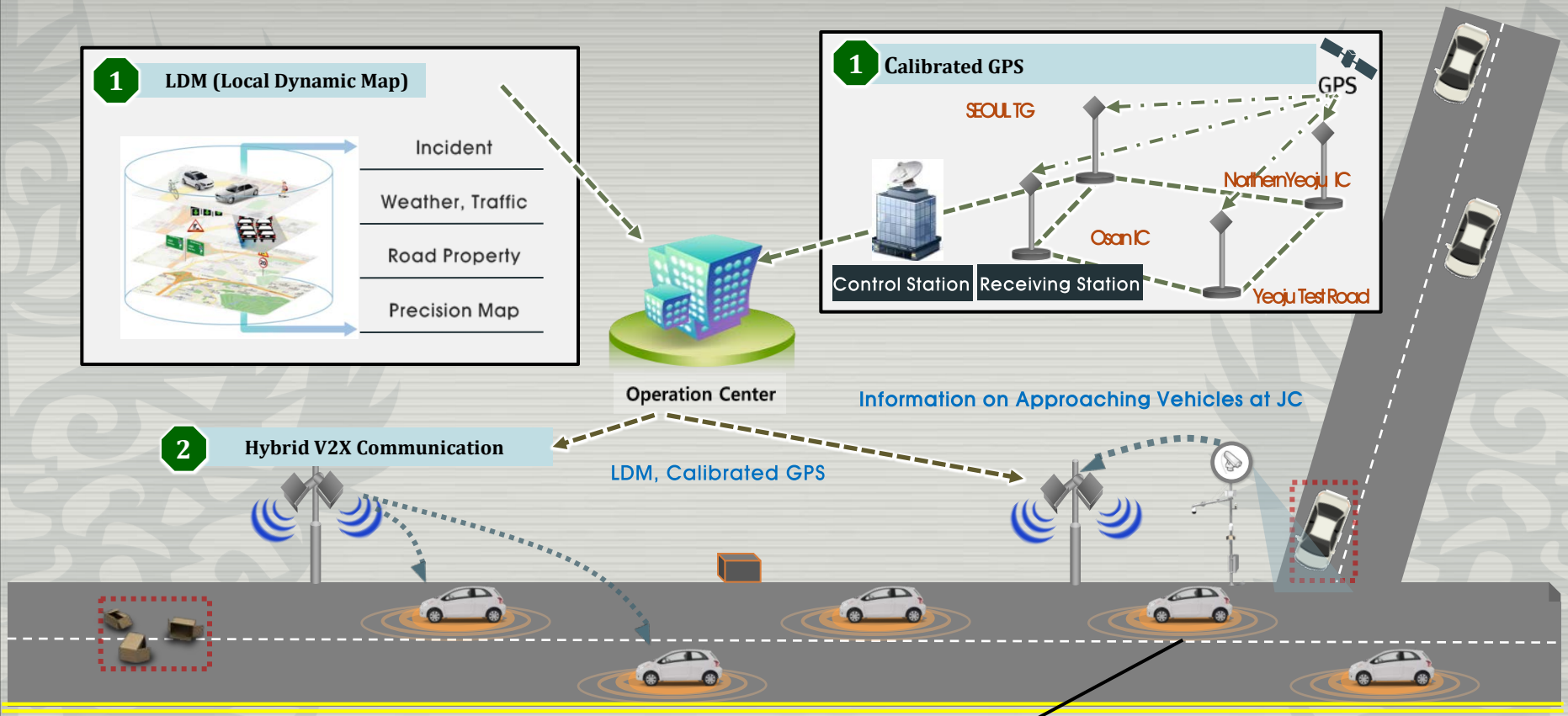
1 Calibrated GPS

Operation Center

Information on Approaching Vehicles at JC

2 Hybrid V2X Communication

LDM, Calibrated GPS



3 4 Autonomous Cooperative Driving Vehicle

- Complex Positioning with High Precision
- LDM
- Vehicle Sensor

→ Control of Automated Vehicle

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Test-Bed for Cooperative Automated driving Roadway Systems

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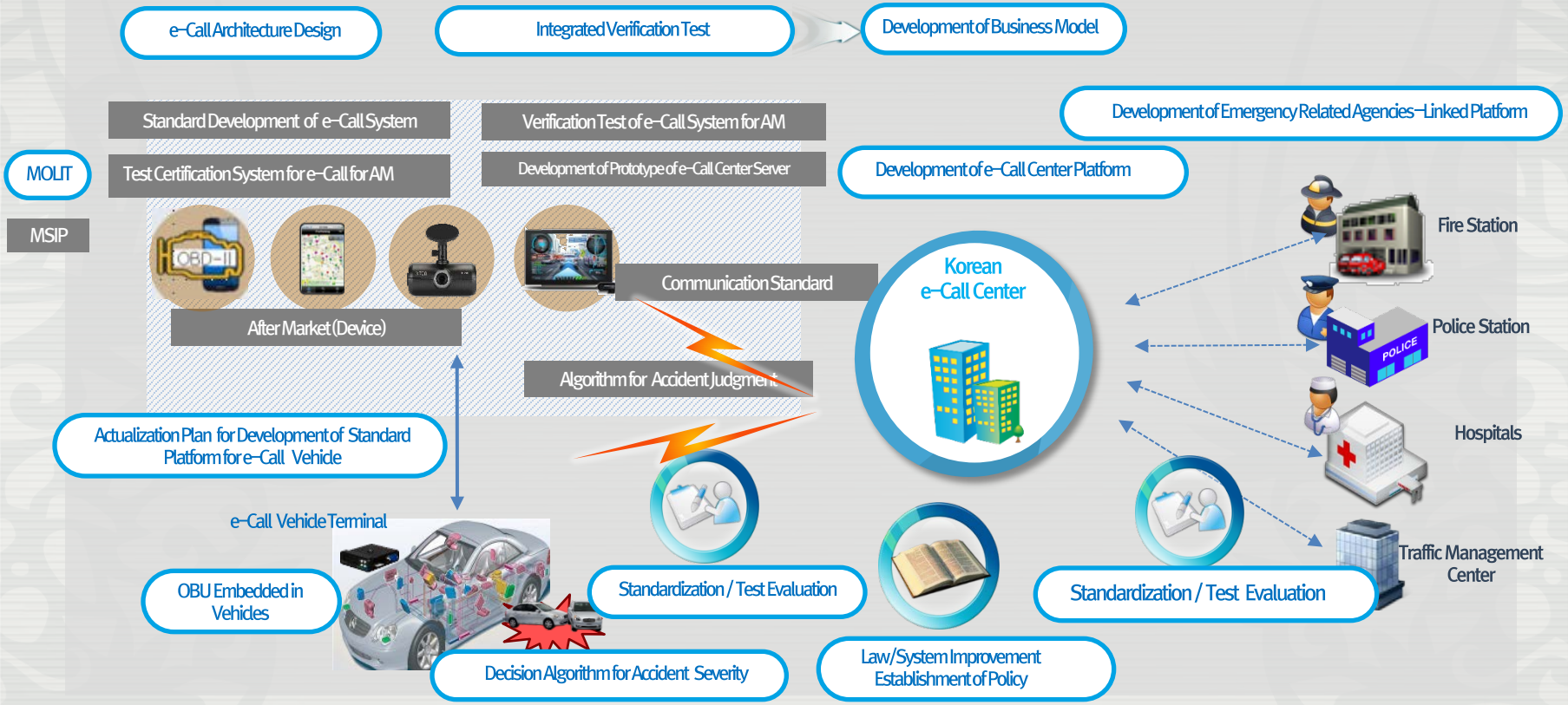
e-Call System Overview

- Emergency Rescue System (e-Call) based on Vehicle ICT
- Implementing Agency: ITS Korea
- Developing
  - Operation Model for e-Call Center & Center Platform
  - Service Manual and Algorithm for e-Call
  - Standards, Certification, and Evaluation for e-Call
  - Laws, Regulations, & Business Model for Rapid Stabilization
- Period: 2016.04 ~ 2019.06
- Budget: US$10.8M

e-Call System

Role of Each Participating Agency



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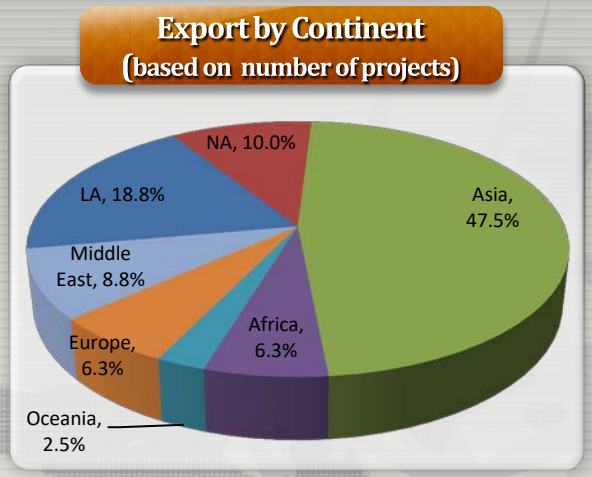
Current Status of Export

- Korea ITS exported to 39 countries since 2006
- As of May. 2017, a total of about 102 projects have been conducted including ETCS (Electronic Fare Collection), ATE (Automatic Traffic Enforcement), AFC (Automatic Fare Collection), ATMS (Advanced Traffic Management System) and PIS (Parking Information System), WIM(Weigh In Motion)



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International Cooperation

Support for ITS Services and Key Technologies

- Consulting for ITS key technologies and the best services to each country
- Assisting briefing session for each country
- Sharing know-how and solution of Korea`s ITS

Reinforcement of Cooperation between Government & Private company

- Assisting high-level and working-level meetings to secure regular ITS cooperation channel
- Supporting for training professionals through ITS-related research and education programs
- Providing financial supports such as EDCF, etc.

MOLIT
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Best Place for 2022 ITS World Congress

SEOUL

I·SEOUL·U

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Thank you !!