

MOBILITY 4.0- TAIWAN TRANSPORTATION

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Minister

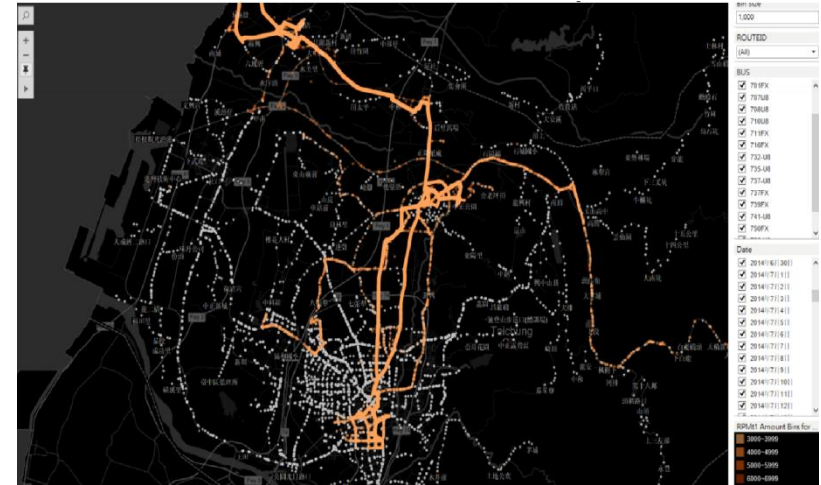
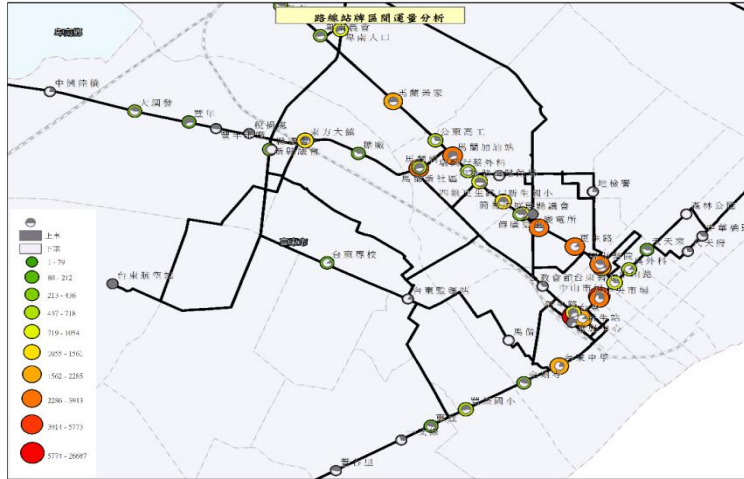
Ministry of Transportation and Communications

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Outline

- Background
- Achievements
- Vision & Strategies
- Cooperative issues
- Concluding Remarks

Background



Transportation service is a precise business.....

Where are passengers and vehicles?

When? How much?

Where do they come from?

The next stop?

How to Service them?

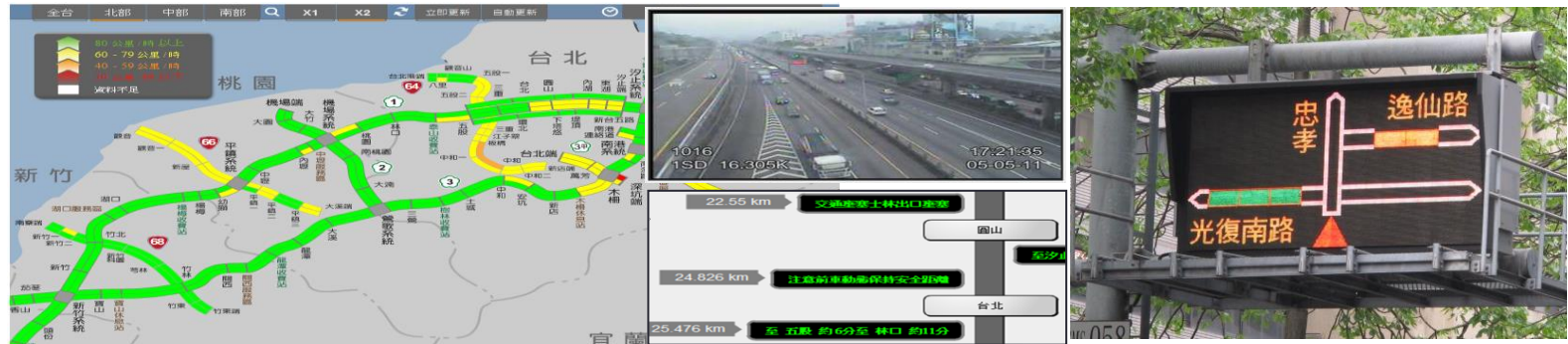


Mobility 4.0: Make Mobility Service more Efficient.

Achievements (1/3)

ATIS & APTS

- Collect and Launch **Real-time Traffic Information**



- Smart Bus System



Achievements (2/3)

E-payment

- Electronic Toll Collection
 - Results
 - 2013: Implement ETC in entire freeway network
 - Utilization rate → 93 % , Accuracy rate → 99.9%
 - Annual benefit of energy conservation → \$75 million USD
 - 24-hour uninterrupted service

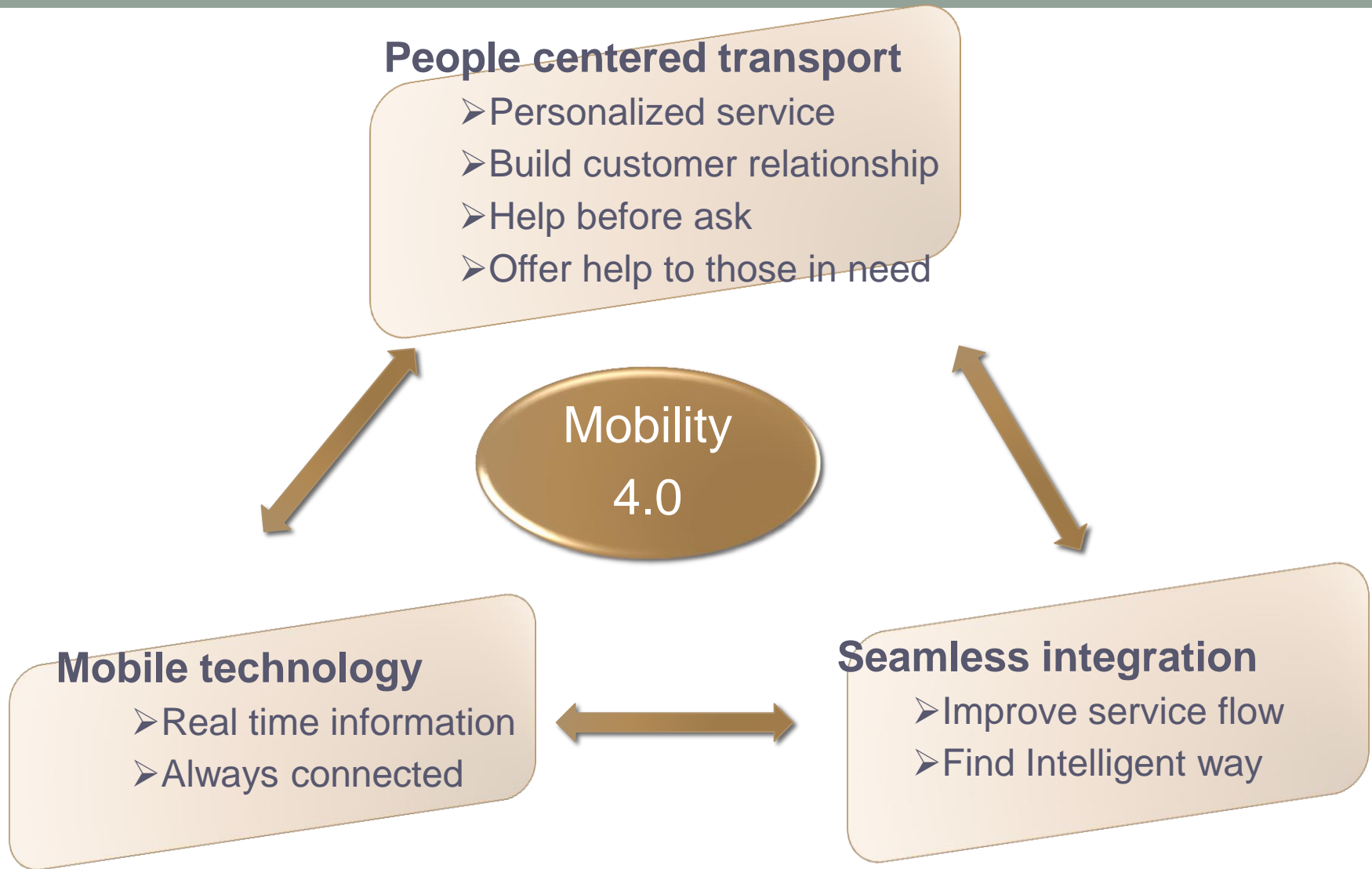


Achievements (3/3)

E-payment

- Multi-card system
 - Development the **multi-card reader**
 - **85 million transactions are made each month**
 - Create a climate of competition for several card companies
 - **Competition lead to creativity (Avoid monopolization)**
 - **Comes with benefit (Improve service for customer)**
 - Extend the market share through the Combination of different card users

Vision



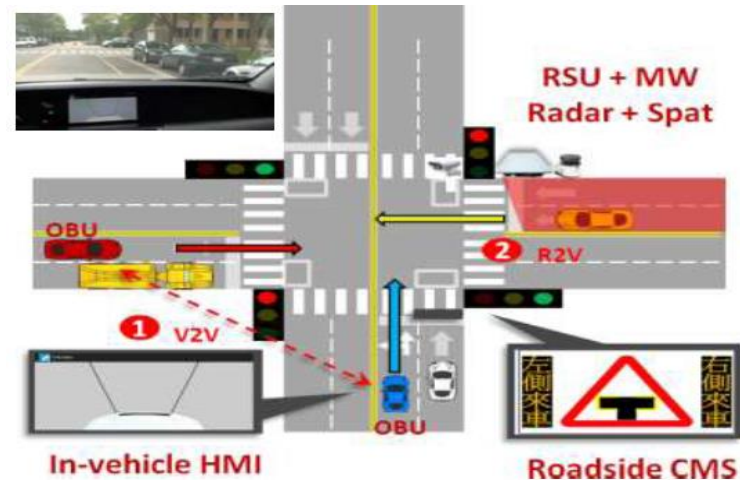
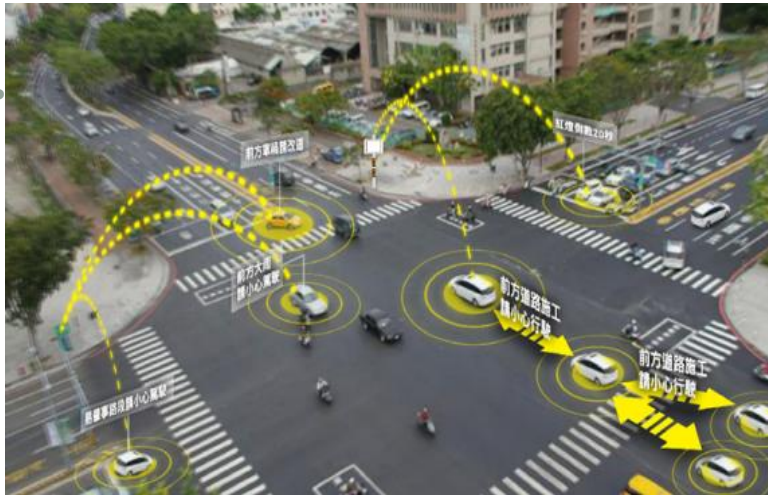
Strategy 1: Innovative applications on C-ITS

- **Current states**

- V2X-based Expressway and Urban Road Applications(2015)

- **Future Work**

- Aims to move forward to Mobility 4.0 by facilitate development of connected driving, which makes traffic safer, smoother and cleaner.



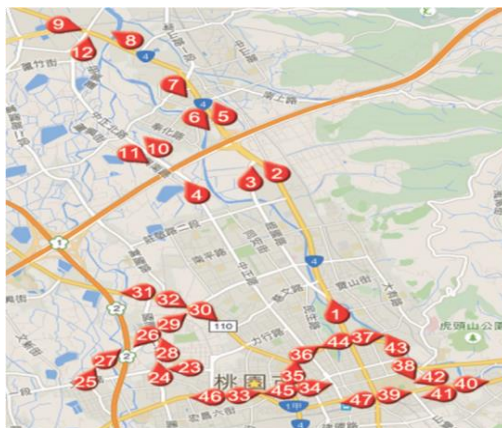
Strategy 2: Synchronized demand and supply with Smart Data

• Current states

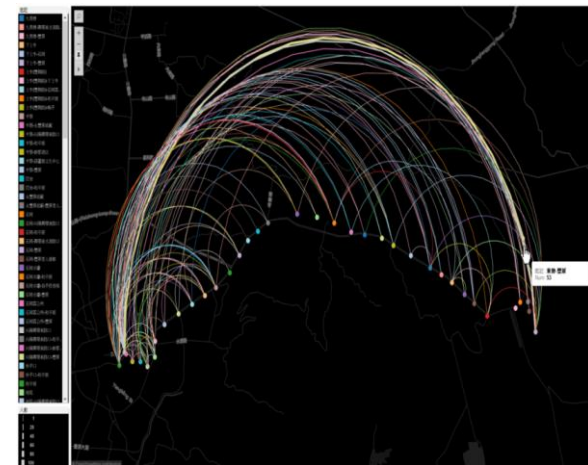
- Data Visualization Analysis has been conducted in Taiwan transit system(2015)
- ETC data has been applied in Congestion analysis and highway policy

• Future Work

- Exploit and Integrate big data from Taiwan digital infrastructure
 - Smart Card / Transit Fare /Telecommunication / Vehicle Data



起訖表	迄點									
	1	2	3	4	5	6	7	8	9	10
起點	1	793	140	55	193	41	40	92	5	51
	2		10	8	636	165	127	306	16	17
	3			5	319	146	79	131	11	18
	4				4	59	66	63	14	1443
	5					259	292	945	42	6
	6						18	19	5	42
	7							48	6	31
	8								108	9
	9									6
	10									



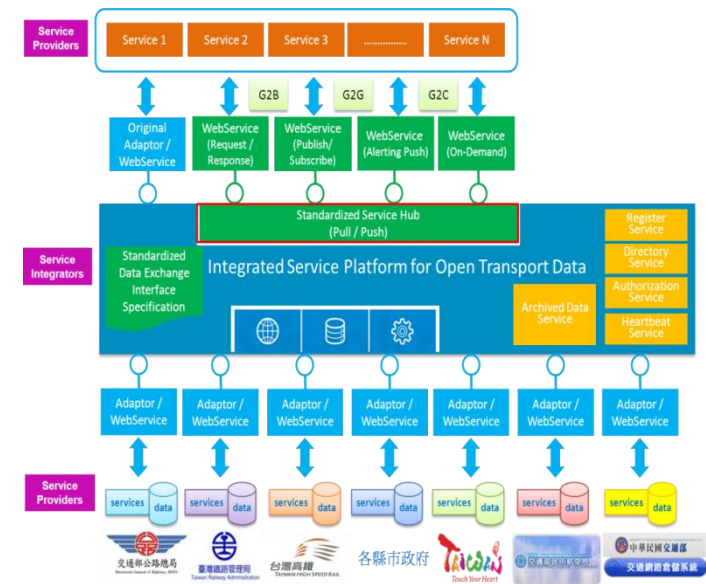
Strategy 3: Integrated public transportation service

• Current states

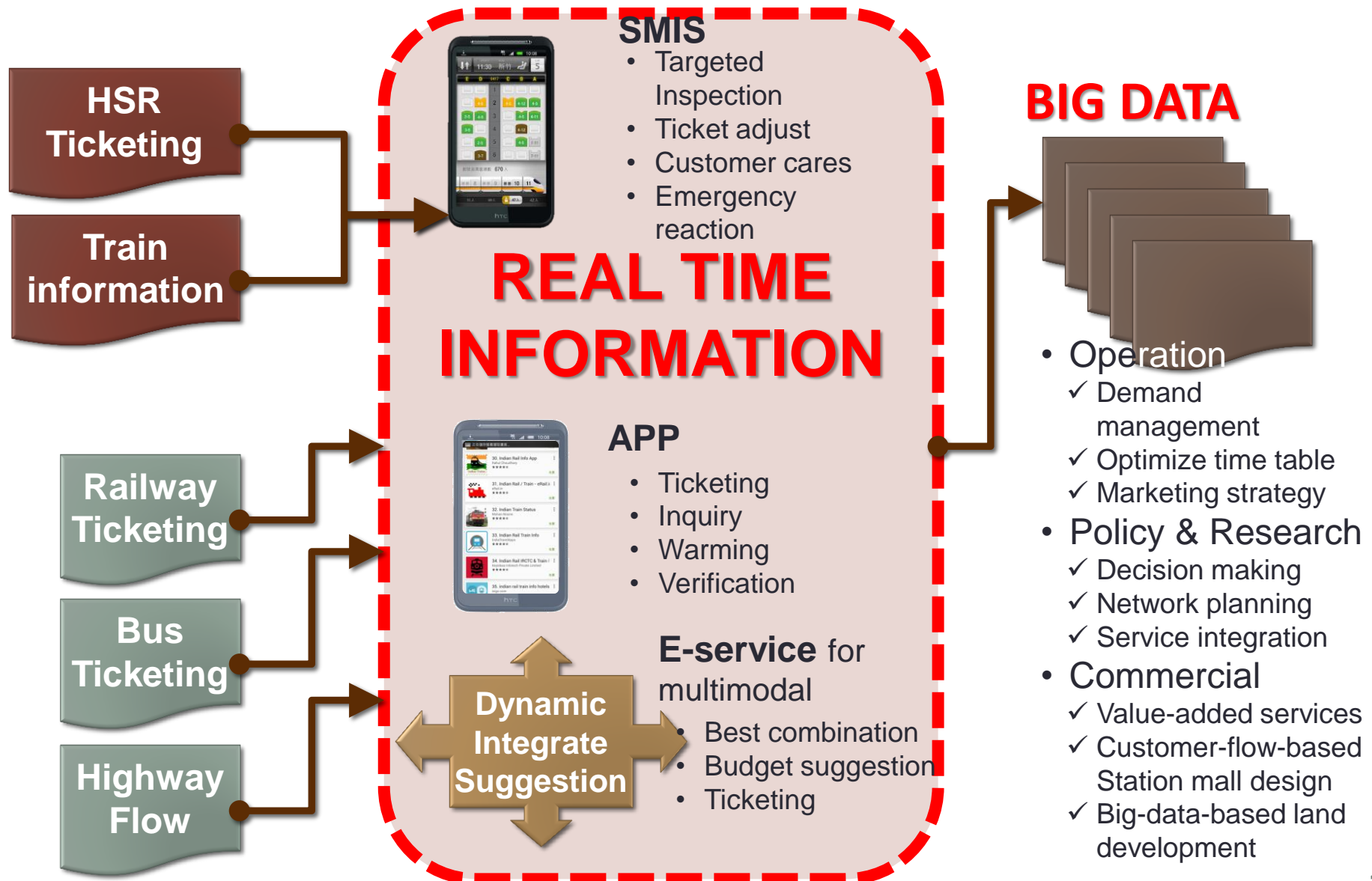
- Public Transport Data Exchange Platform(PTX,2015)
- Building a platform to integrate all of the information across all modes of public transport in Taiwan.

• Future Work

- Make mobility as a service (MaaS)
 - Provide integrated and personalize transportation service
 - Provide integrated payment and ticket service



Strategy 4: Mobilized applications in railway system (1/2)



Strategy 4: Mobilized applications in railway system (2/2)

- THSRC plans to establish the intelligent CCTV system with automatic detecting & warning functions for safety and security.



Cross Platform Warning Line



Color of Object Detection



Personal Belonging Left



Cross Platform Warning Line



Abnormal Staying Person



Crowd Detection

Cooperative Issues ^(1/3)

- **The development of railway system in Germany**

- There is the densest railway network in Germany
- Core technologies of mechanical and electrical system, manufacture, safety management, verification & validation etc. in railway of Germany are well-known and become role models.
- In Taiwan , the development of railway is one of the most important policies.
 - Railway
 - High-speed railway
 - MRT
 - Light rail



Cooperative Issues (2/3)

- **5G & DSRC in C-ITS , Communication Protocols**

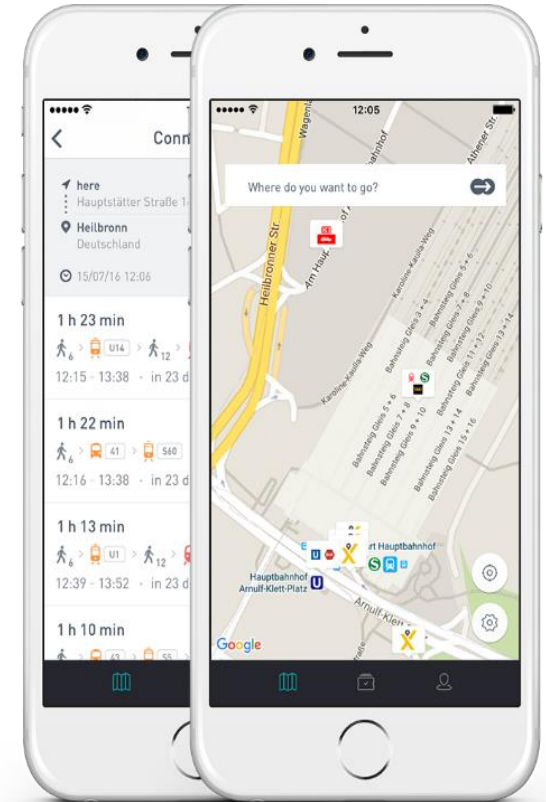
- 5G and DSRC technologies support C-ITS.
- In 2008, Electronic Communications Committee allotted 5.9GHz (5.875-5.925GHz) to the usage of ITS in Europe. In 2003, Access layer specification for ITS-G5 allotted 70MHz to DSRC.
- In Taiwan, we have started C-ITS project that based on the using experience 、 protocol of Europe.



Cooperative Issues (3/3)

• Integration of Guide Services

- The world's first example of Mobility as a Service (MaaS) is now live in Hannover
- An integrated workflow that encompasses registration, routing, booking and invoicing for several transport modes (public transport, taxis, station-based and free-floating car-sharing)
- In Taiwan, a pilot project will build a platform to encompass railways, High Speed Rail, airports, and highway systems



Concluding Remarks

- **Transcend traditional thinking and focused on technology and supply side**
- **Expand people centered transport**
- **Connect industrialization with creativity**
- **International cooperation**

THANK YOU
