



From ITS to IoT & Smart City

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President of ITS Taiwan

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Fast Facts of Taiwan

Major Achievements in Taiwan ITS

ITS Next in Taiwan

Fast Facts of Taiwan

- Land Area - 36,193KM²
- Population - 23.50 million
- Household- 8.44 million
- Per capita income
 - USD 23,040 (GNP)
 - USD 39,600 (PPP*)

* PPP= Purchasing Power Parity



➤ Taiwan has **over 80% ICT service** penetration rate & Internet usage rate

Household Computer Adoption



88.4%

Household Internet Adoption



84.8%

Household Broadband Adoption



81.6%

Smartphone Adoption

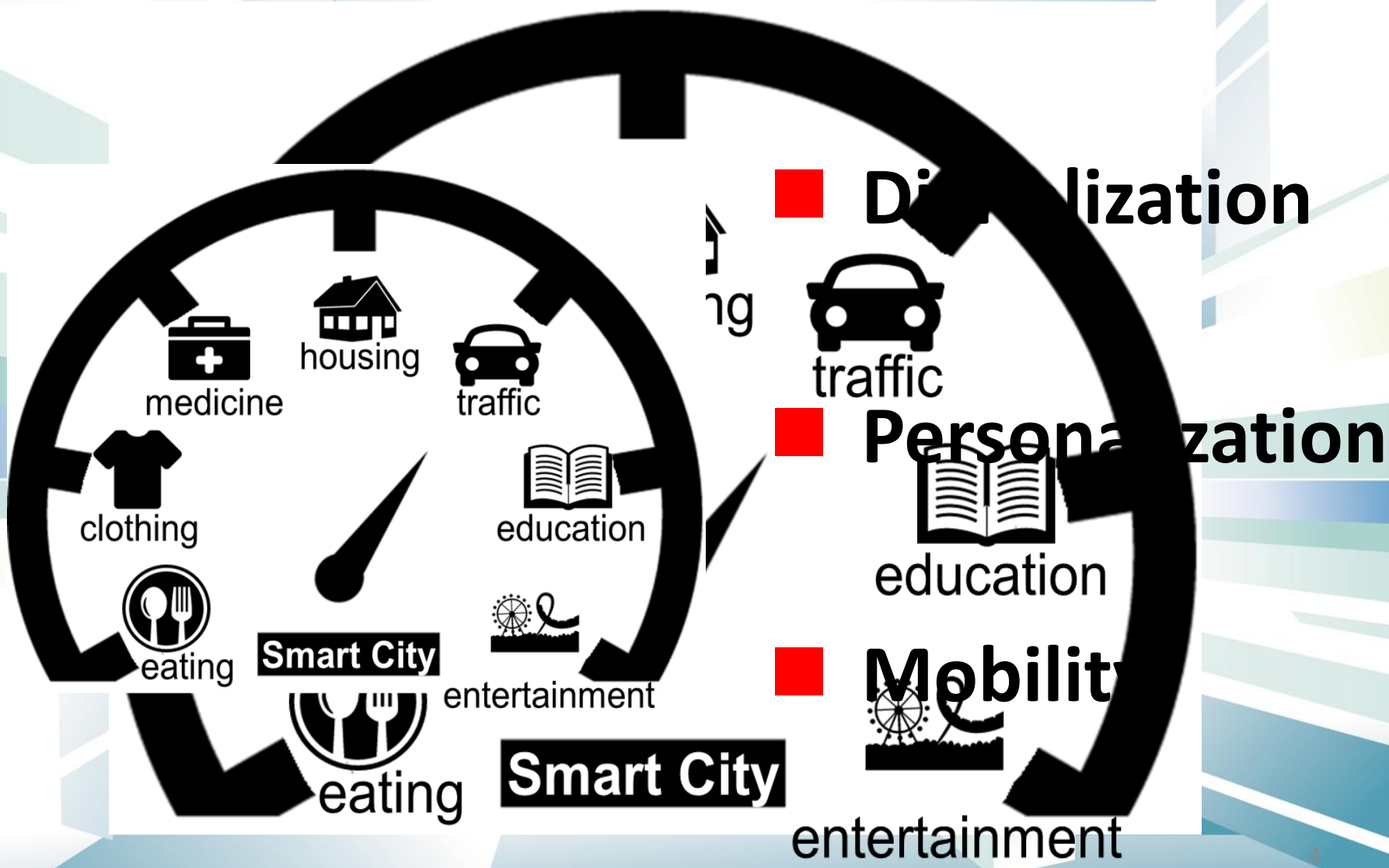


65.4%

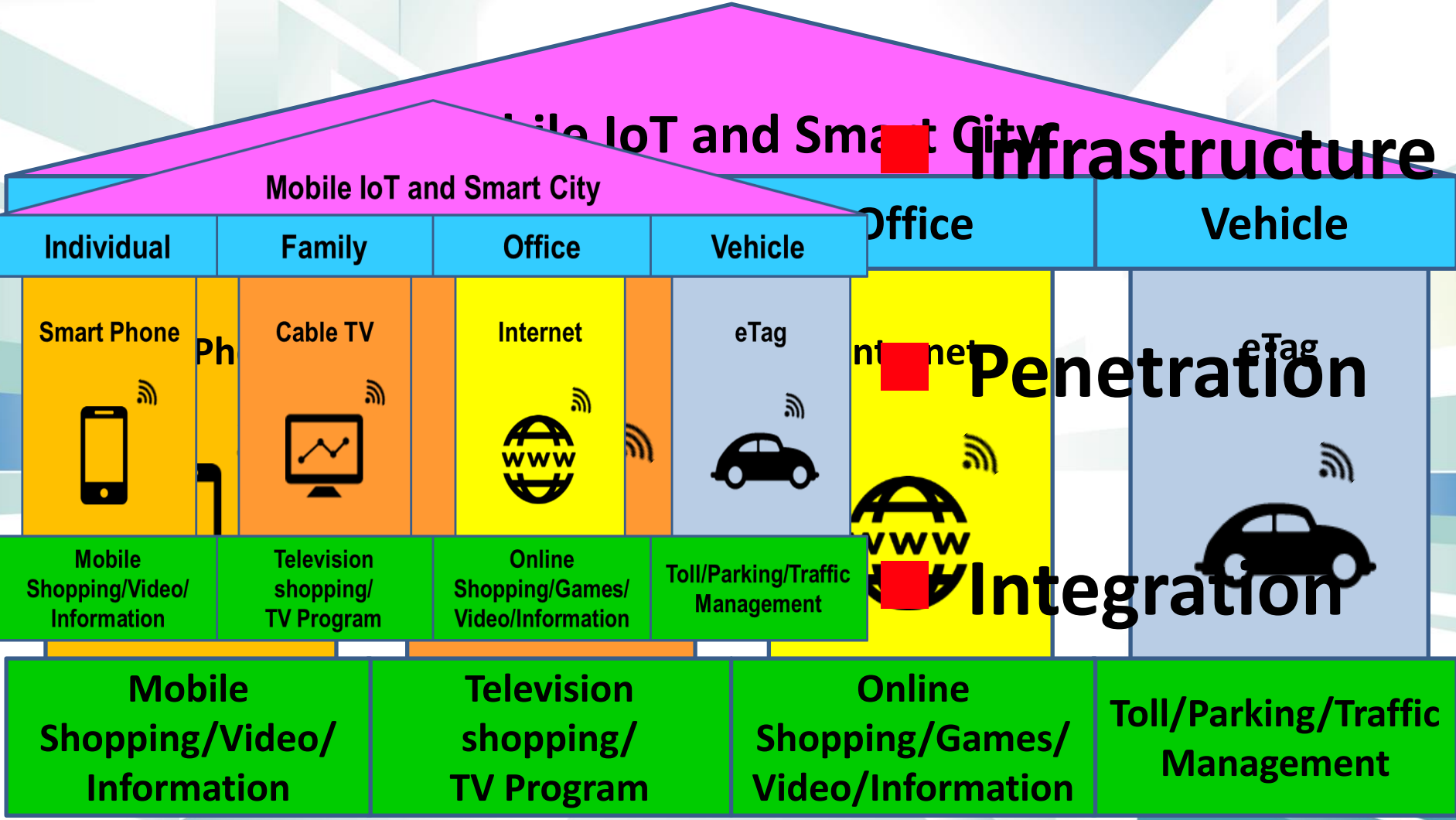
➤ Taiwan's ICT hardware market share ranks **World No. 1**



Smart City



Mobile IoT and Smart City



Infrastructure

Penetration

Integration

Road from ITS to Smart City



Smart City

Intelligent
Transport



Smart Phone



Multi-card



eTag

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Fast Facts of Taiwan

Major Achievements in Taiwan ITS

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Major Achievements in Taiwan ITS

Safe Drive



Smooth Traffic



Sharing Economy



Seamless Transport



Sustainable Services



Major Achievements in Taiwan ITS Electronic Toll Collection



Area	36,192 Km ²
Population	23 M
Registered Vehicle	7.1 M
Operation Scope	Freeway No. 1, 3, 3A, 5. Total 926km with 327 gantries across both directions
Tolling Method	Distance-based
BOT Contract	The Taiwan Area National Freeway Bureau awarded 20 years of BOT concession to FETC from 2004 to 2025

RFID-based MLFF AET in Taiwan



RFID Customer	6.7M
AET Daily Transactions	Daily Average: 16 M Historical Daily High: 22.7 M
RFID Tag Installation Rate	94%
Successful Tolling Rate	99.98%



RFID-based IoT Infrastructure

ETC Front-end

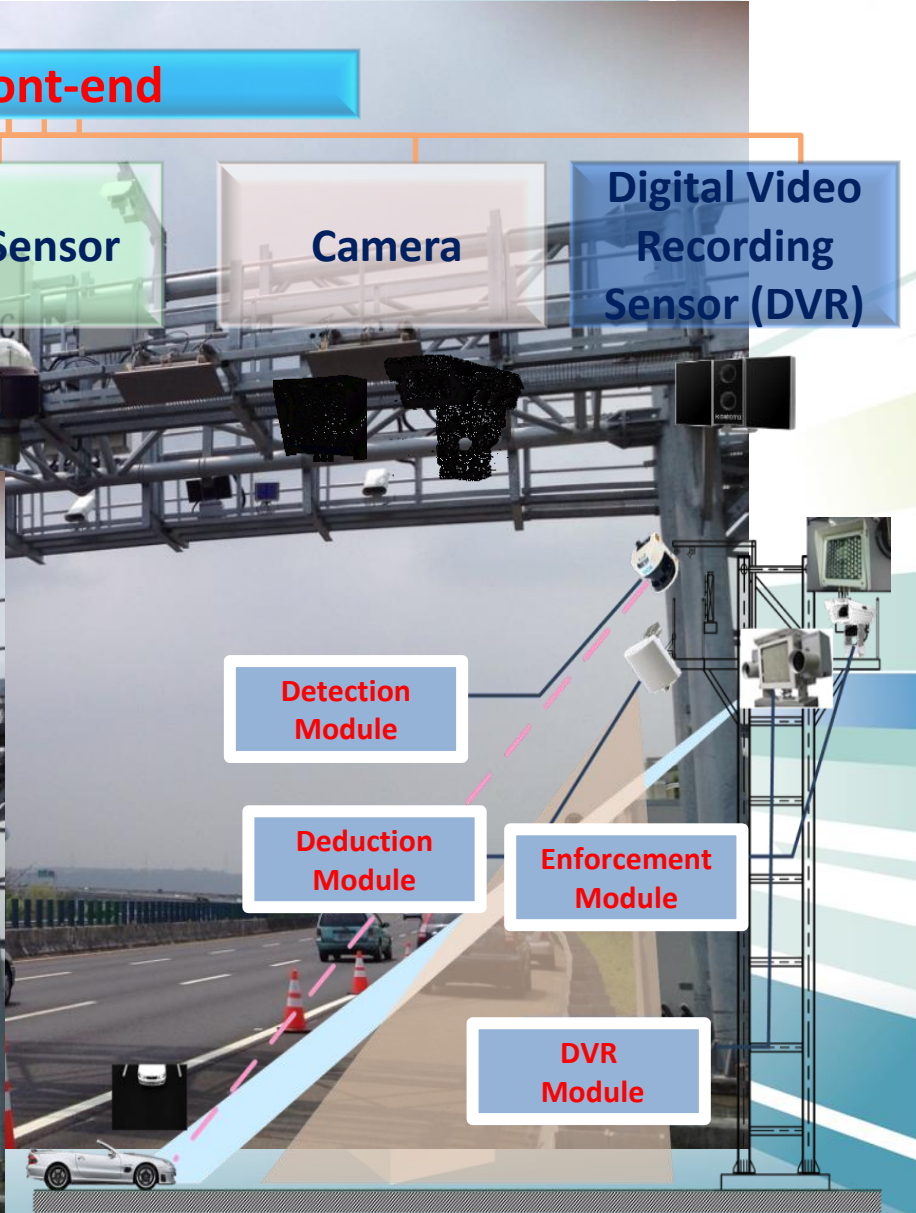
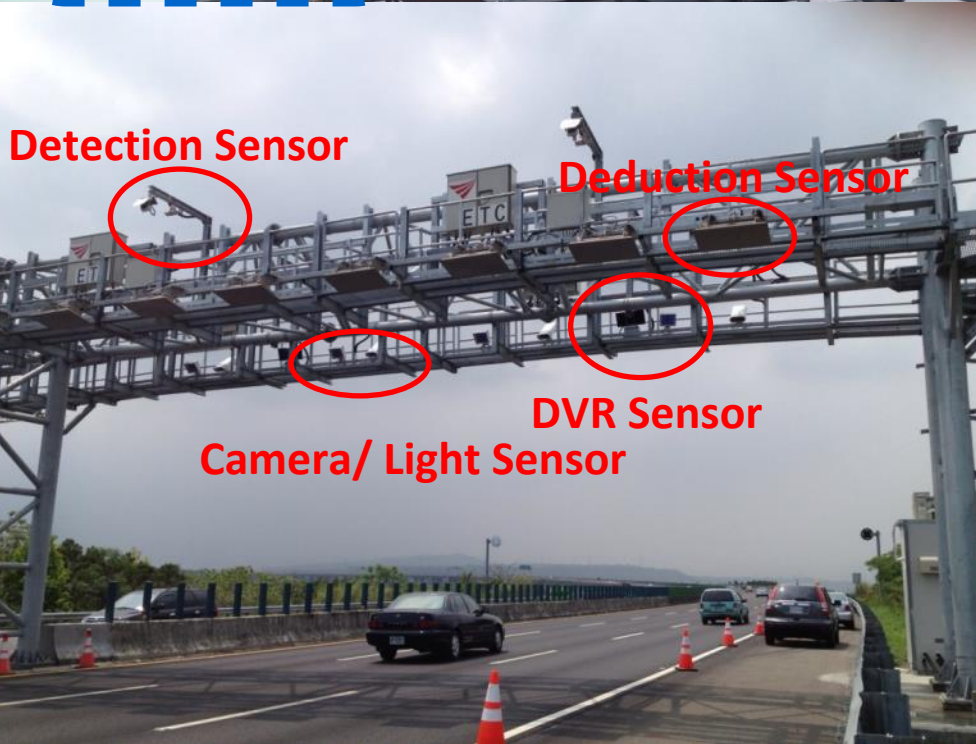
Deduction Sensor (RFID)

Detection Sensor (Laser)

Light Sensor

Camera

Digital Video Recording Sensor (DVR)



Major Achievements in Taiwan ITS

Safe Road Use



Disaster Alert and Response Service



- Real-time alert on mobile device
- Collect disaster info combined with map, video & communications technologies to provide users keyword research to obtain real-time images & precaution

Intelligence Bus Safety Service



- Provide external & internal surveillance videos in pick-up zones & seats areas; coupled with GPS, provided as accident proof
- Has been commercialized

Major Achievements in Taiwan ITS Smooth Transportation



Real-time Dynamic Path Planning & Navigation Service

Official App

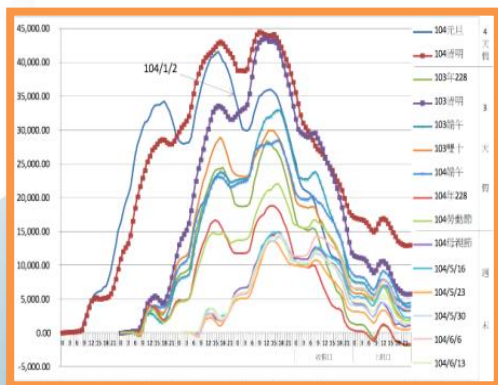


Private App



Integrated Intelligent Traffic Signal Auto-control Service

Collecting abnormal data to ensure better traffic congestion management



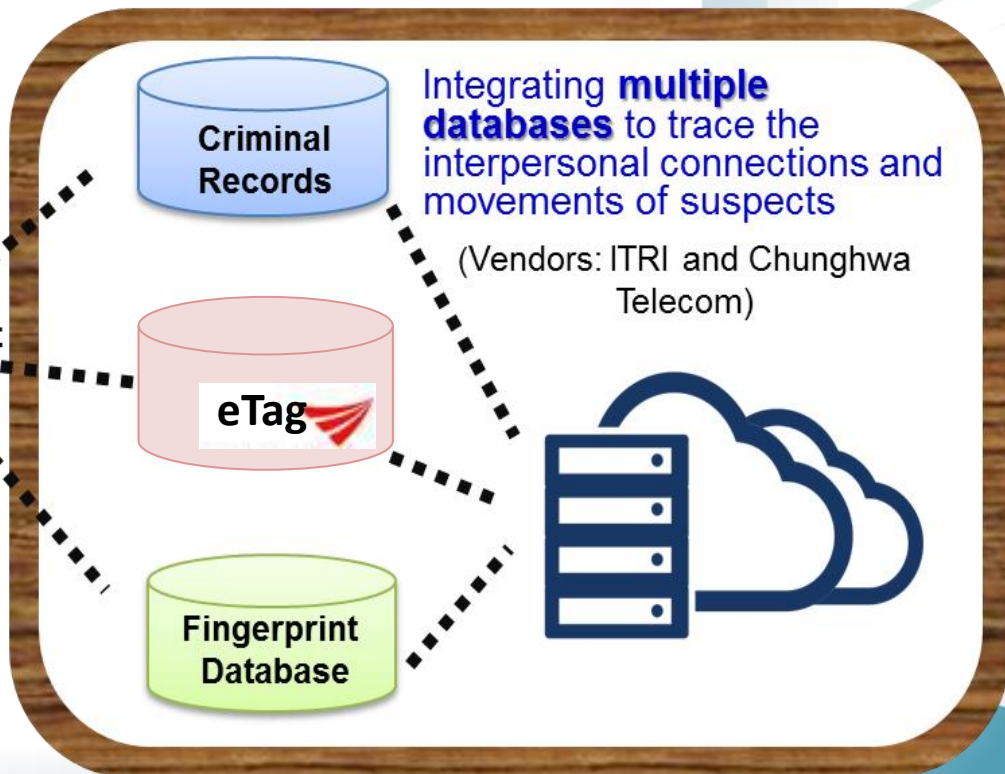
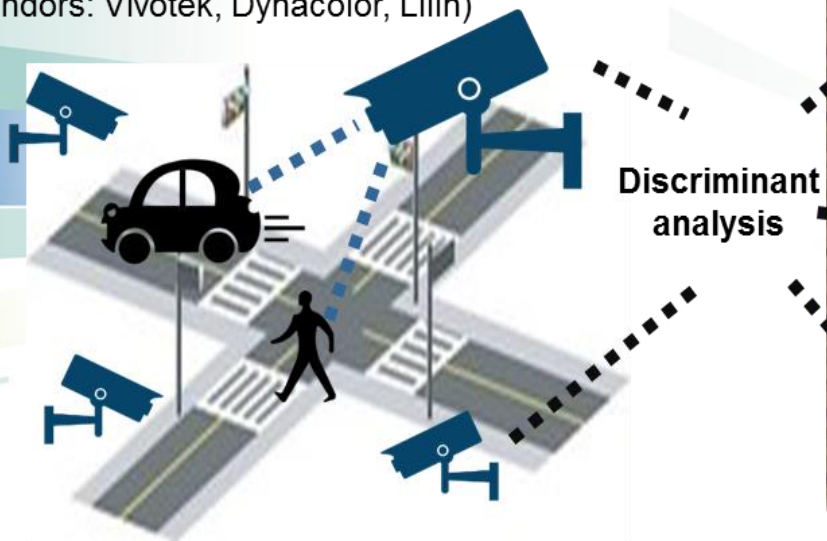
Major Achievements in Taiwan ITS

Smart Surveillance System



Low police to population ratio will affect the city security and building a comprehensive surveillance system is therefore essential.

170,000 HD IP cameras deployed across Taiwan (108 urban citizens share one IP camera in urban area)
(Vendors: Vivotek, Dynacolor, Lilin)



Information security system

Major Achievements in Taiwan ITS

Sharing Information



Integrated Real-time Parking App Service & Mobile eTag Payment for Parking

People in **Taipei City, New Taipei City, Taoyuan County** and **Taichung City** can access the app which has covered nearly **50% TW population**.

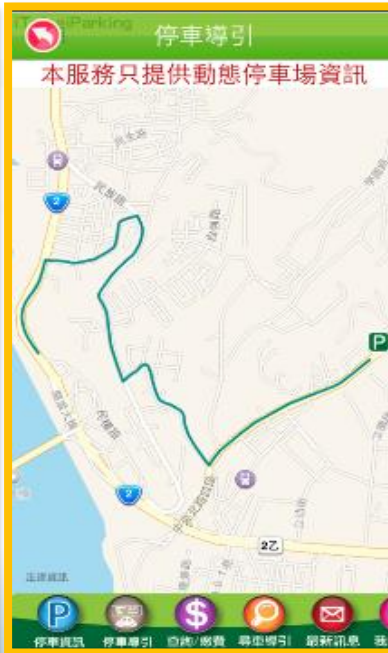
Colors indicate the parking lot status



Automatic vacant parking lot detection



GPS guides you to parking lots



Paying parking tickets via app

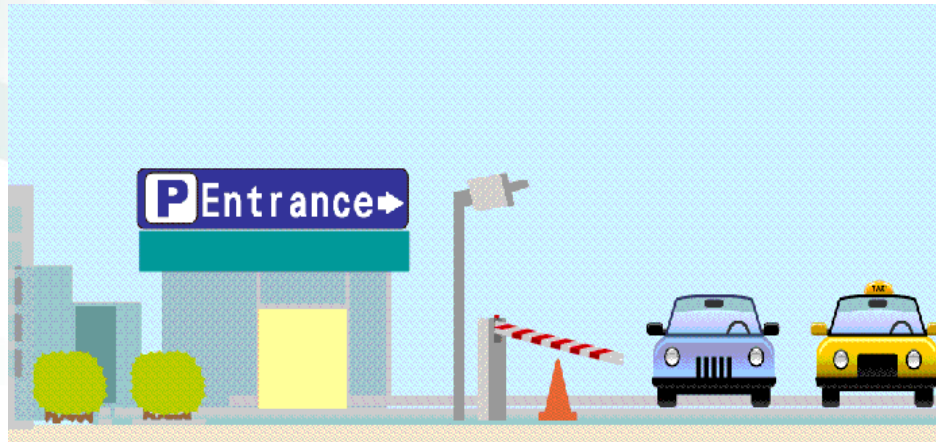


Major Achievements in Taiwan ITS



Integrated Real-time Parking App Service & Mobile eTag Payment for Parking

Entrance



Dear Customer,
Welcome to Neihu
parking lot at
08:06, 05/10/2015.
Your account
balance is \$395.
The parking rate
will be charged by
\$5/hr.

Exit

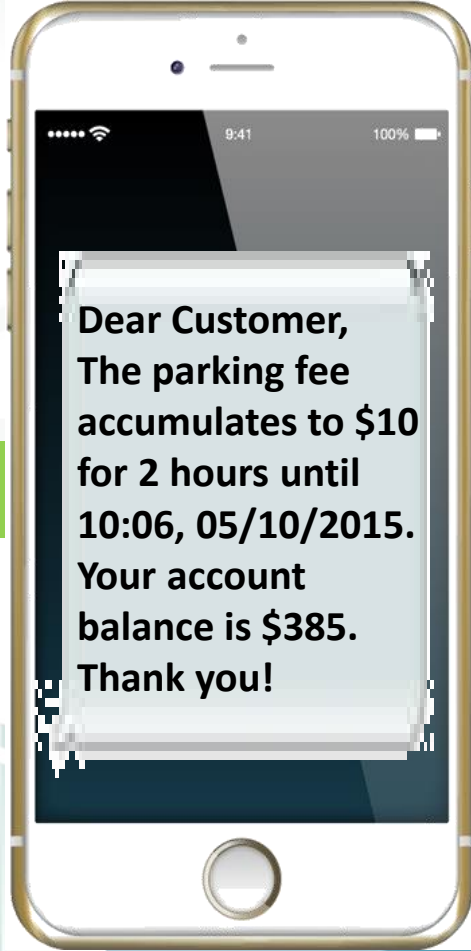


Major Achievements in Taiwan ITS



Integrated Real-time Parking App Service & Mobile eTag Payment for Parking

Entrance

A smartphone displaying a notification from a parking app. The notification text is as follows:

Dear Customer,
The parking fee
accumulates to \$10
for 2 hours until
10:06, 05/10/2015.
Your account
balance is \$385.
Thank you!

The smartphone screen also shows the time 9:41 and 100% battery level at the top.

Exit



Major Achievements in Taiwan ITS Sharing Information



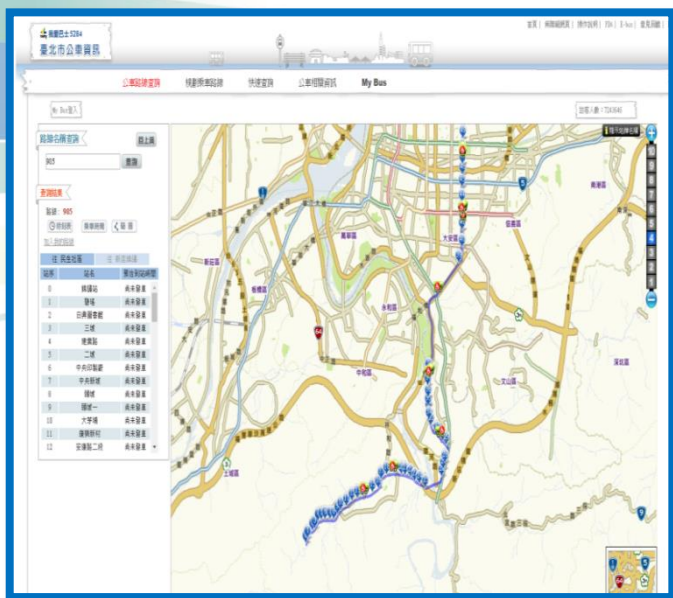
Real-time Transit App Service

14 cities and counties in TW can access the transit app with an average number of **60 million searches** being input per month; over **1,000 smart bus stops** have been set up

bus route info and arrival time on **website**

open source platform to develop private transit **app**

arrival time & nearby amenities info at **bus stops**



Major Achievements in Taiwan ITS

Sharing Economy



Vehicle-sharing Service

10 cities and counties in Taiwan provide Youbike service; over **1.78 million** passengers ride Youbikes every month.

Registering as a member via app, website or at KIOSK

Renting & returning bike, and making payment using Easy Card all within few seconds

Renting bike at one location and returning it to another



Major Achievements in Taiwan ITS Seamless Transportation



Multi-card E-ticketing Service

Multi-card

Easy Card



iPass



iCash



happycash



Multi-transit



Major Achievements in Taiwan ITS

Smart High-speed Railway Services



- operations management
- emergency management
- passenger services



- THSRC won ITS World Congress Hall of Fame Industry Award 2016



Major Achievements in Taiwan ITS

Smart e-Scooters & Battery Swapping Network



Bluetooth

Replacing battery within 6 seconds

Gogoro

Embracing with more than 80 sensors

Source: IDB, compiled by MIC

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Forward-looking Infrastructure Development Program by Government



Investment is expected to reach approximately **US\$ 28.78 billion** from 2017-2024,

Digital
Infrastructure

Urban-rural
Development

Green
Energy

Railway
Development

Aquatic
Environments

while the **Smart Railway and ITS projects** will have a scale of **US\$ 14 billion**.

ITS Next in Taiwan

Taiwan ITS Plan 2017-2020



3 Major Focus Areas

- **Taipei-Yilan corridor**: one the highly congested corridors
- **Eastern Taiwan**: The most rural counties (population density 100 per/km²)
- **Municipality**: Urban traffic and mobility management



ITS Next in Taiwan

Taiwan ITS Plan 2017-2020



- Taipei-Yilan corridor: one of the highly congested corridors
- Eastern Taiwan: The most rural counties (population density 100 per/km²)
- Municipality: Urban traffic and mobility management



ITS Next in Taiwan

Taiwan ITS Plan 2017-2020



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ITS Next in Taiwan

Taiwan ITS Plan 2017-2020



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ITS Next in Taiwan



Public Information Service

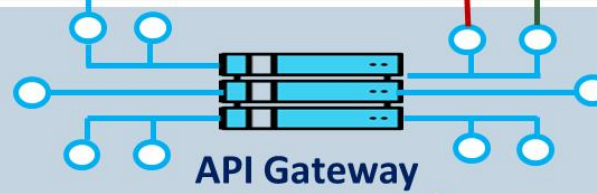
Personalized Mobility Service

Mobile Payment Service

Business Sphere I.
Smart City Service (SaaS)



Business Sphere II.
Application Platform (PaaS)



Open Data Platform of Transportation



Google Map



eTag Data Service Platform

Business Sphere III.
Sensor Network (IaaS)

Vehicle-sharing



Smart Scooter



Intelligence Bus



Smart Railway



All Electronic Toll



**Thank you
&
Welcome to Taiwan**



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