

# *EcoMobility World Festival and Congress 2017*



# **Smart Mobility & Smart Transportation in Tainan**

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**Oct. 2<sup>th</sup>, 2017**

# Outline



I . Introduction

II. Smart Transportation in Tainan

III. Smart MaaS in Tainan

IV. Conclusion

# I. Introduction

## II. Smart Transportation in Tainan

## III. Smart MaaS in Tainan

## IV. Conclusion

# About Tainan

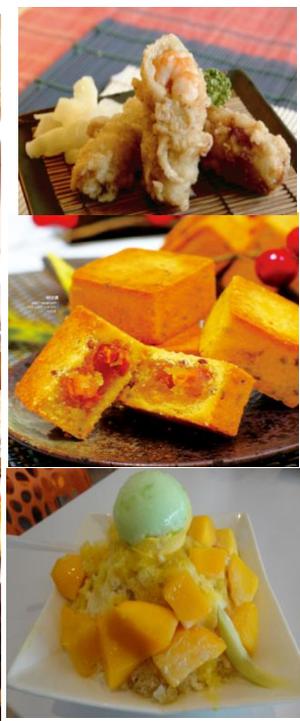
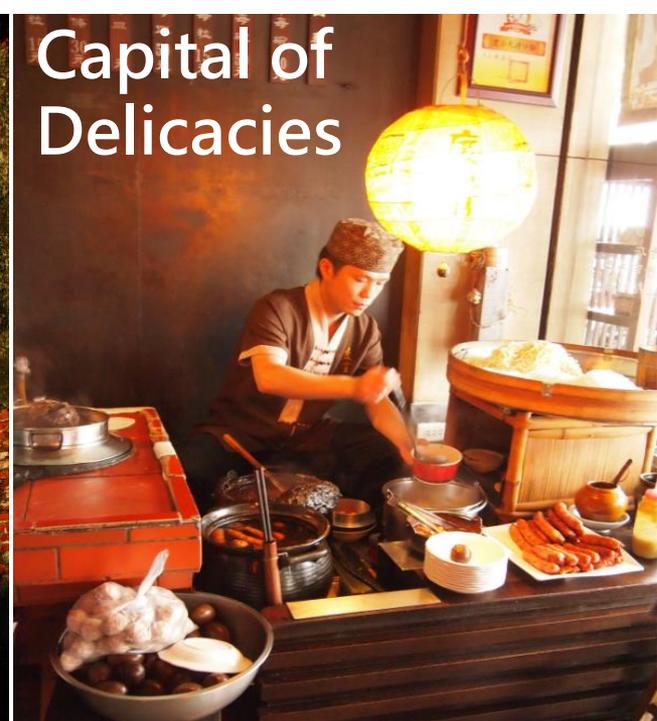


Area	2,191 km <sup>2</sup>
Population	1.88 m
Density	859 /km <sup>2</sup>
Num. of cars	630 K
Num. of motorbikes	1.29 m
Vehicle / person	1.02/person
Travel by foot	4.8%
By bicycle	4.7%
By car	24.8%
By motorbike	57.4%
By public transportation	6.7%

Capital of culture



Capital of Delicacies



Capital of Diverse Ecology



台江

生態文化園區

Capital of High Technology



# Challenges & Opportunities



IBM Smart City Challenges



4G Smart City Projects



ICF Smart 21

2014 : In the "smarter cities challenge" launched by IBM, the experts recommended: "Define software architecture for smart traffic management center".

2015 : Tainan city government in partnership with FarEasTone telecommunication company to practice "4G Broadband Smart City Project".

2017 : The "Smart 21 " award from ICF contest.



# The Smartest Ancient Capital



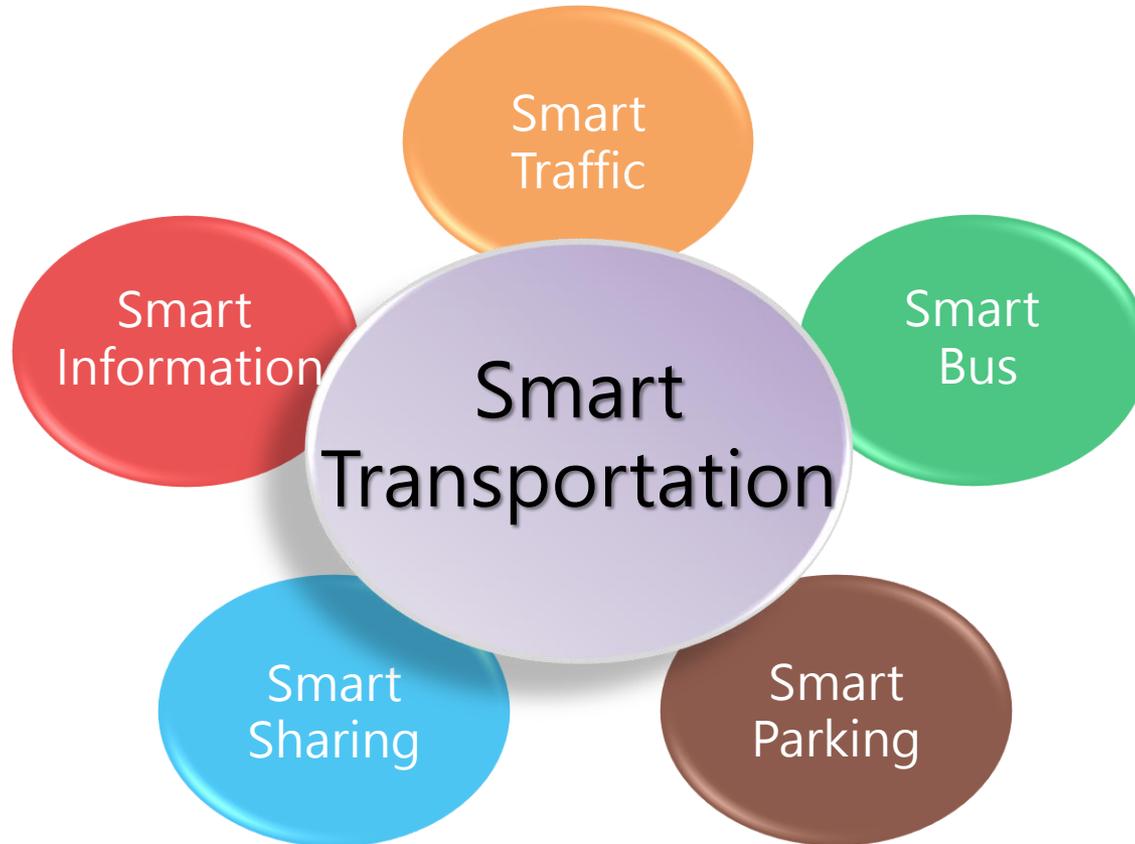
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# Framework of Smart Transportation



# 1. Anping Easy Go



Purpose

- ◆ Reducing traffic congestion in Anping historical scenic area.
- Finding parking lots efficiently.
- Alternative routing information in case of congestion.

Practice

- ◆ Detour and parking lots guiding:
- Detect traffic flow.
- Congestion analysis.
- Detour information release through APP, CMS.
- ◆ Facilities : VD(16), CCTV(6), CMS(12).

Profit

- ◆ about **30mins** travel time **saving** from getting into/out Anping area.
- ◆ **29%** average travel speed improved.



- VD
- CCTV

- Parking lots
- Congestion

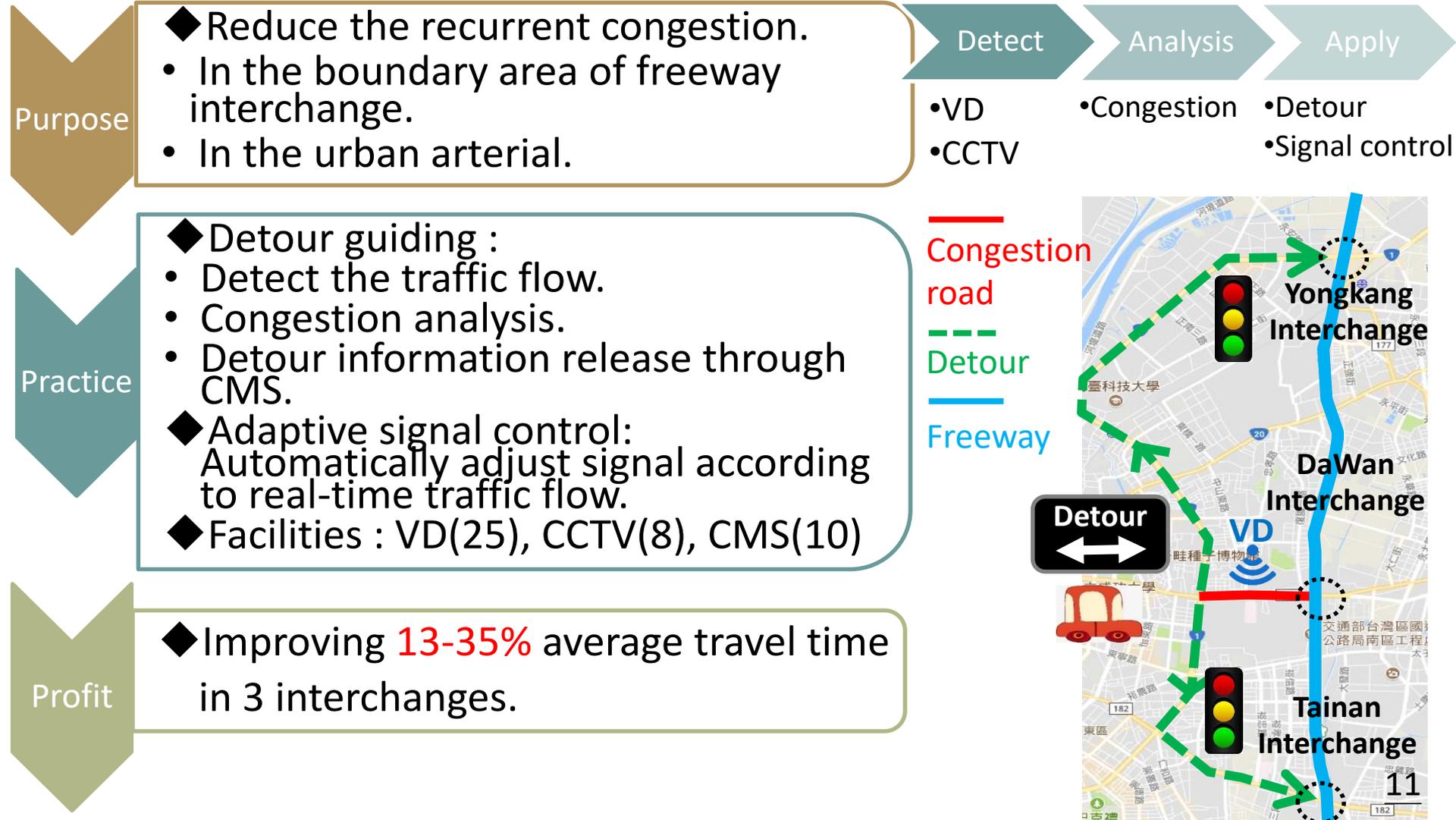
- Detour



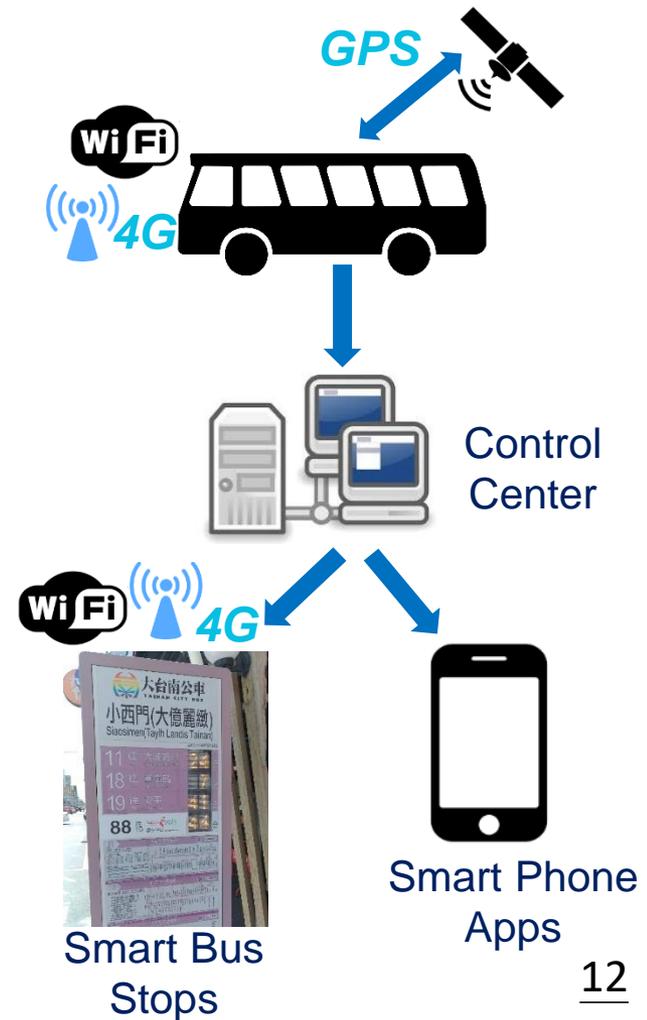
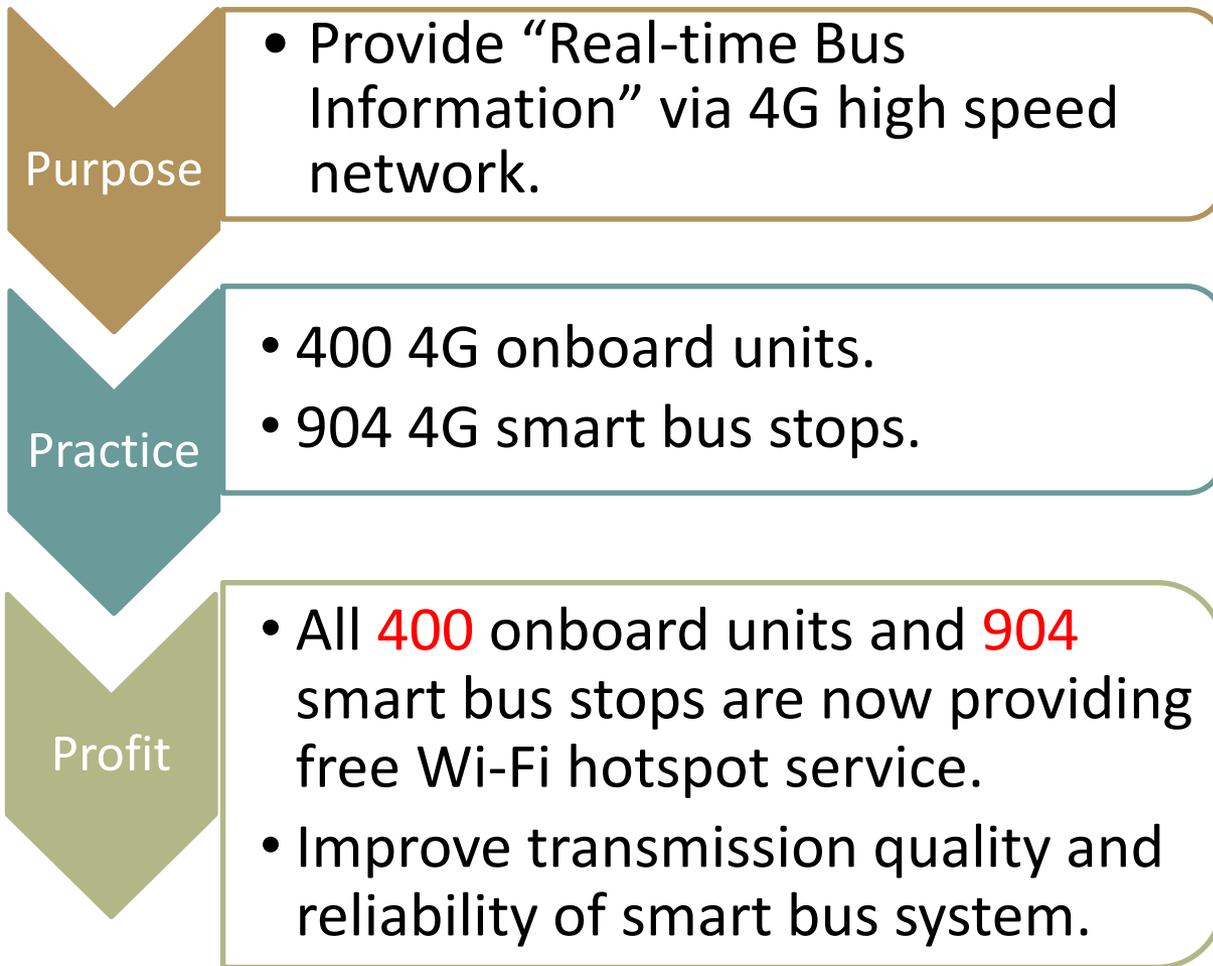
— Congestion road

— Detour

# 2. Integrated Regional Traffic Control System



# 3. 4G Smart Bus Service



# 4. Virtual Smart Bus Stop

## Purpose

- QR code scanning for “Real-time Bus Information System.”

## Practice

- QR code at every single bus stop.
- Simply scan QR code with smart phones to show real-time information.

## Profit

- Cheap, simple and easy-use.
- Provided at all **4,000+** bus stops.
- English information also available.



QR CODE on each bus stop

Shinkong Mitsukoshi Department Store[9203]	
Updated:18:42:41 Refresh	
1	18 mins
to Tainan Train Station	
2	20 mins
to Anping	
5	11 mins
to Queena Plaza Hotel	
11	4 mins
to Chengsi Village	
18	20 mins
to Wunnan Village	
G17	25 mins

Real-time information shown on smart phones

# 5. Smart Beacon Information System



## Purpose

- Provide in-App bus information automatically, instead of querying by users.

## Practice

- 400 Beacons onboard.
- 3,600 Beacons at almost all bus stops.
- “Push” information to Tainan City Bus App automatically.

## Profit

- Provide real-time bus operation information such as detours or service changes.
- Service extension to tourism information, coupons, vouchers and further applications.



Beacons onboard and at bus stops



Information pushed by beacons

# 6. Bus Priority System for Non-exclusive Bus Lane



## Purpose

- Improve reliability.
- Encourage people to take public transportation.
- Reduce the utilization of private vehicles.

## Practice

- GPS data transmission from on-board unit to road-side unit.
- Signal strategy calculation and determination.
- Green extension, Red truncation.
- 139 km, 498 intersections, 398 road-side units.

## Profit

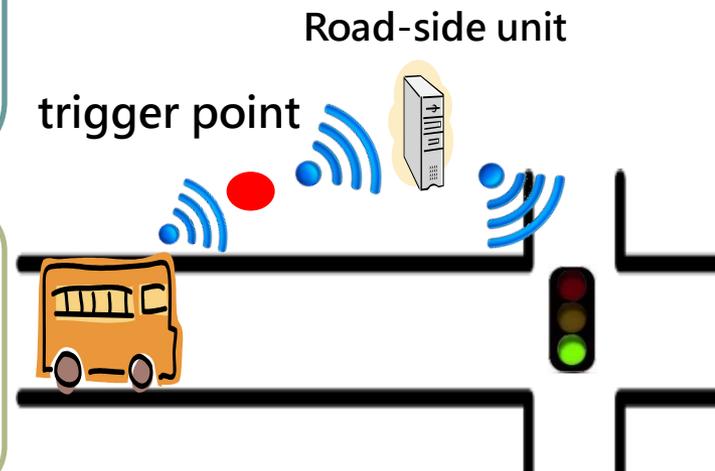
- **1<sup>st</sup>** bus priority system for non-exclusive bus lane system in Taiwan.
- Reduced **10%** average travel time for all bus lines.



• Road-side unit

• Traffic signal  
• bus arrival time

• Green extension,  
• Red truncation



traffic signal turn green<sub>15</sub>

# 7. Smart Roadside Parking Management

Purpose

- Reduce human resources in charging.
- Increase turnover rate of parking spaces.
- Provide real-time parking space information.

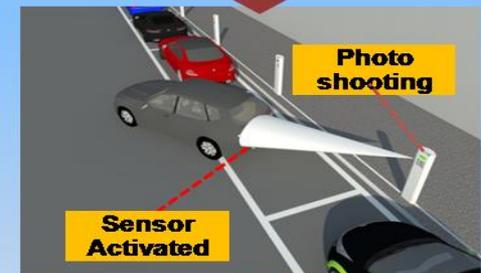
Practice

- A smart parking meter in each parking space.
- Each parking meter equipped with license plate recognition and telecommunication devices which will upload data to management center.
- Locate the parking spaces and APP payment.

Profit

- **120%** turnover rate increasing.
- **220%** parking revenue growth.

## Concept of Parking Detection



# 8. Smart Off-Road Parking Management



Purpose

- Non-token accessing service.
- Parking guidance and intelligent car locating.
- Real-time parking lots information.
- Multiple payment solutions.

Practice

- License plate recognition and e-Tag reading system.
- Parking space detection and intelligent car locating
- Parking lots searching, available parking space and multiple payment services through APP.

Profit

- **8mins** saving in average from parking space.
- **160%** turnover rate increasing.
- **120%** parking revenue growth.

Smart card



Available parking lots display



License Plate Recognition



e- Tag



# 9. Smart Bike Sharing



Purpose

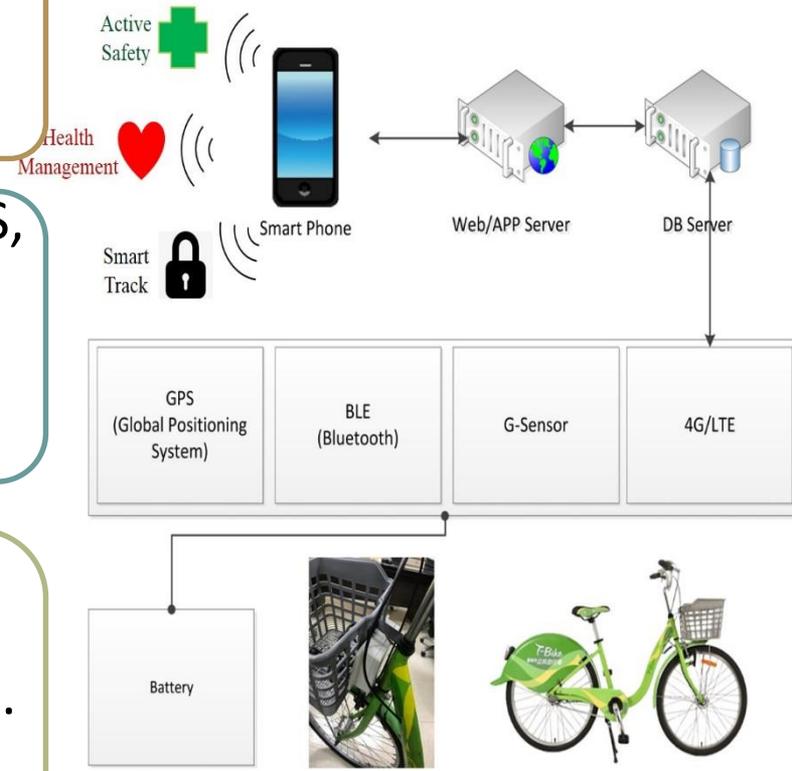
- Improve the T-Bike service through IOT, information, and mobile data transmission technologies.

Practice

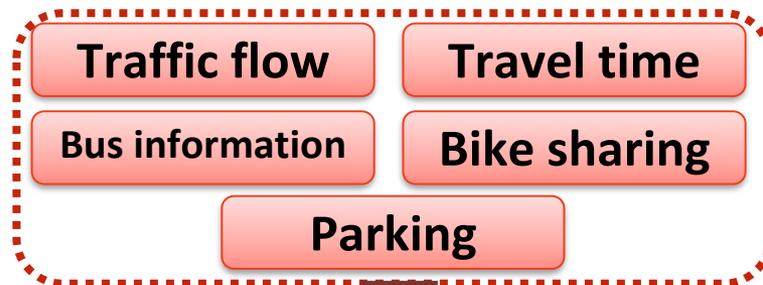
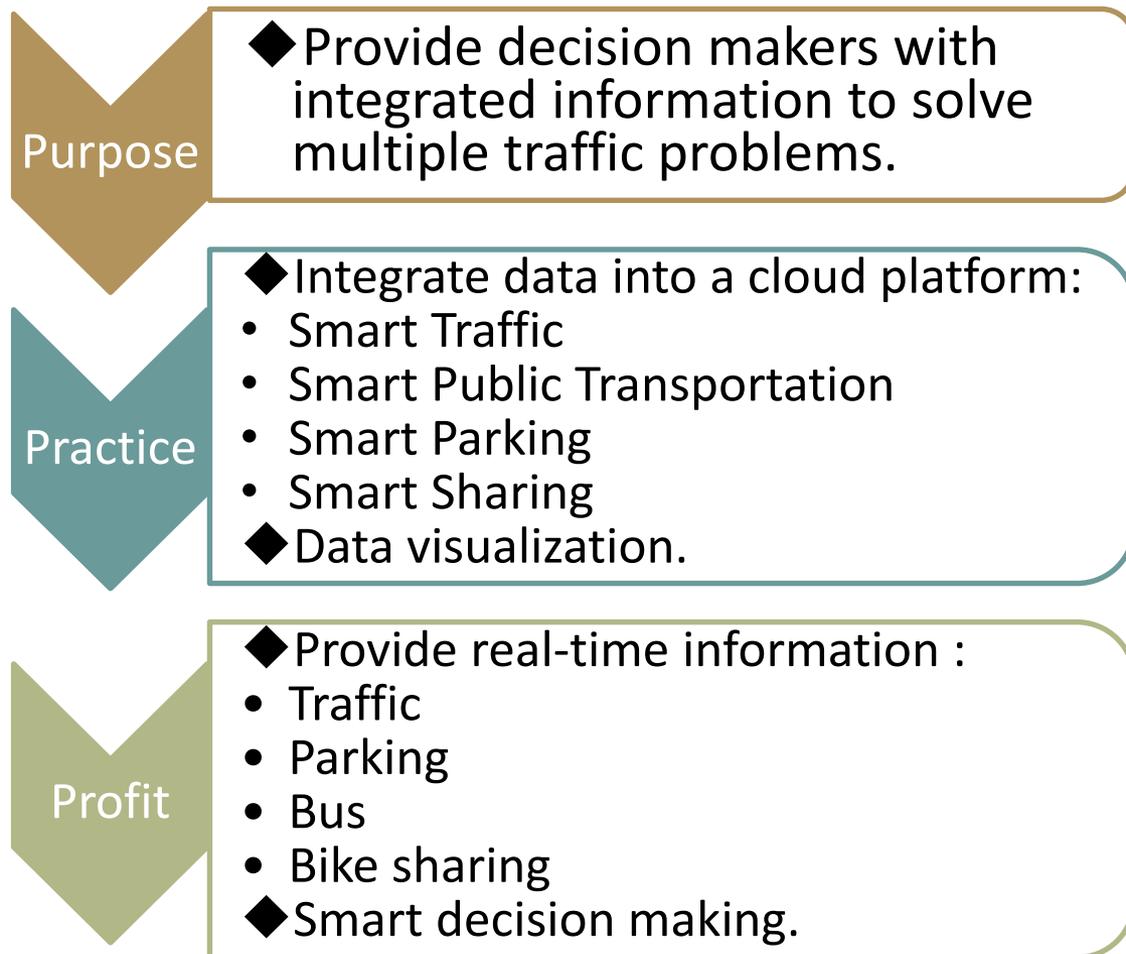
- On Board Unit, an integration of GPS, G-sensor, Bluetooth, and auxiliary power supply devices.
- Big Data Collection.
- T-Bike App Expansion.

Profit

- Offering member health management.
- Providing active safety management.
- Tracking the lost Bikes.
- Integrating Public transport and Tourism Information.



# 10. Smart Integrated Cloud Information Platform



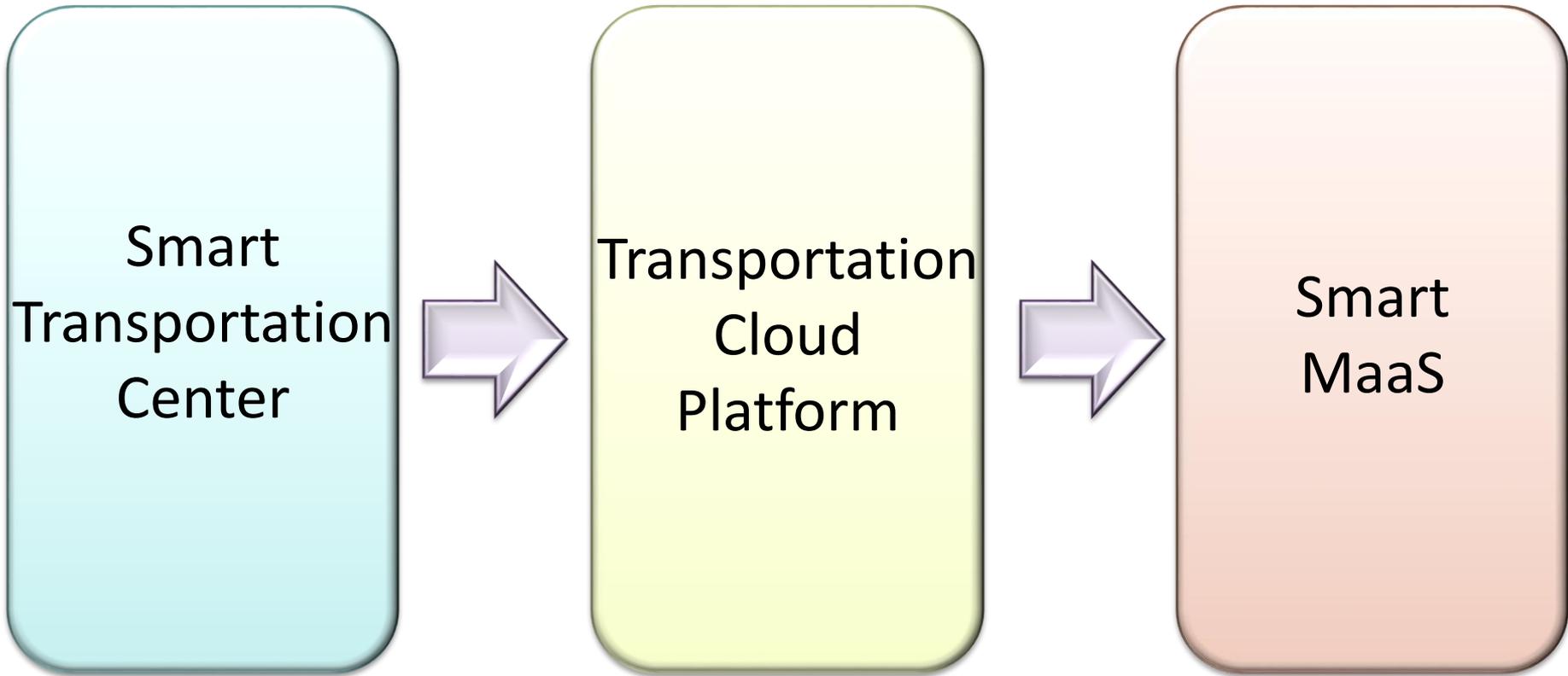
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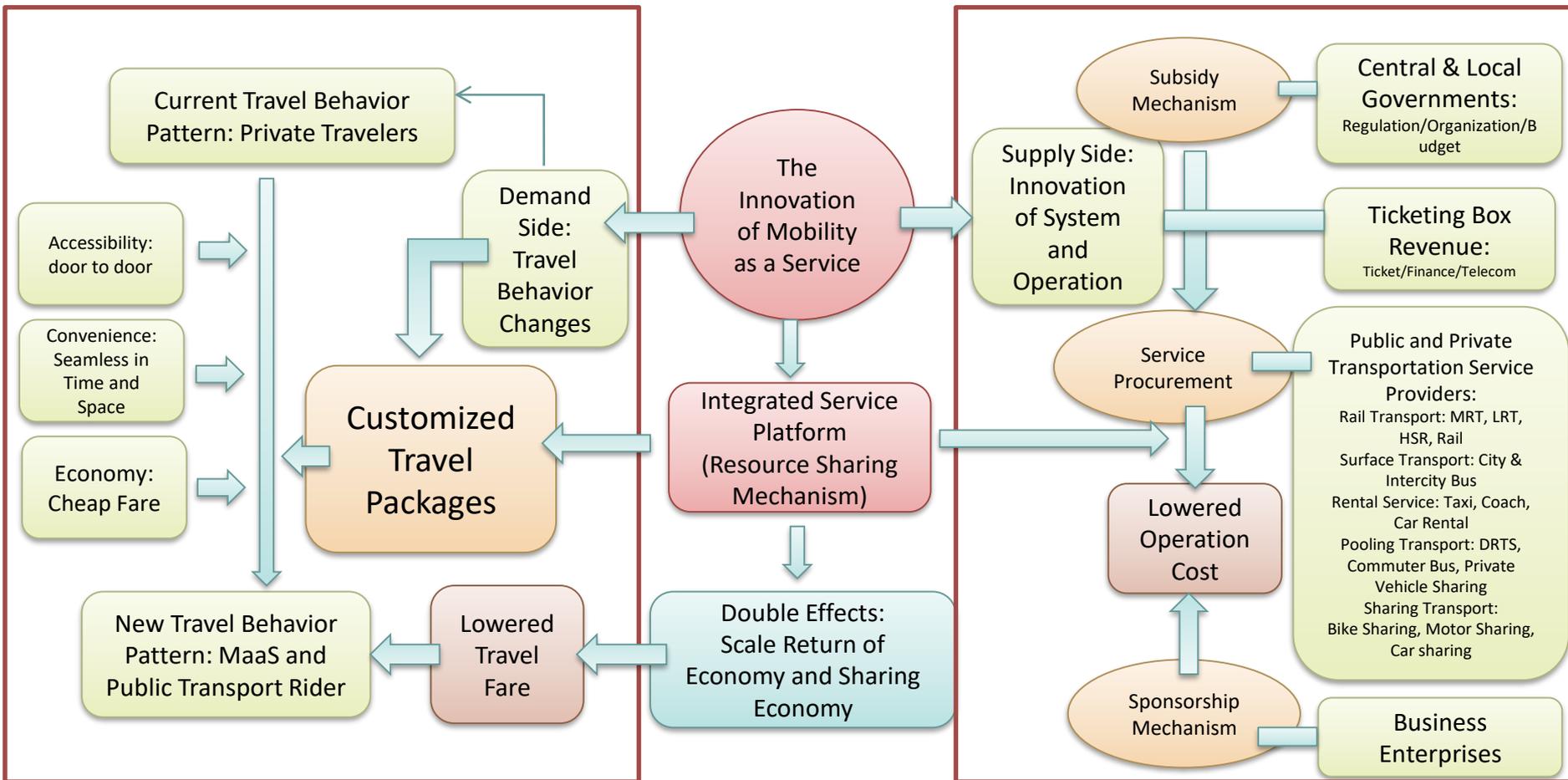
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# Process of Smart MaaS in Tainan



# Framework of Smart MaaS



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# 禮記-禮運大同篇



大道之行也，天下為公

Integrating all public transport modes as a whole for public using and personal sharing

選賢與能，講信修睦

Choosing the best efficient tour for the harmony of transportation system

故人不獨親其親，不獨子其子，使老有所終，壯有所用，幼有所長，鰥寡孤獨廢疾者皆有所養；男有分，女有歸

Providing customized travel packages to meet personal travel demand

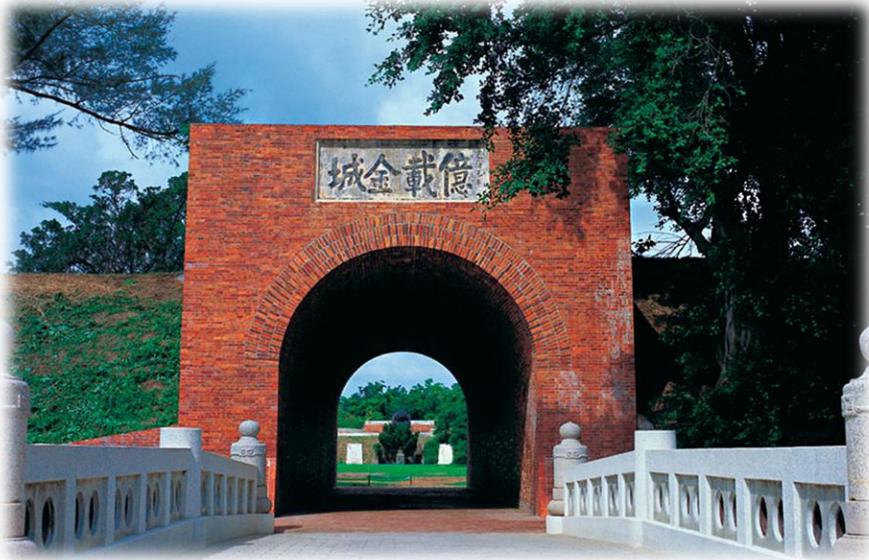
貨惡其棄於地也不必藏於己，力惡其不出於身也不必為己

Lessing personal vehicle utilization and creating transportation resources sharing

謀閉而不興，盜竊亂賊而不作，故外戶而不閉

proving seamless transportation services through the coordination between different modes in the transportation system

# *Culture in the Heart, Smart for the Future*



# 台南

Tainan



一個適合人們作夢、幹活  
戀愛、結婚、悠然過活的地方  
~台灣文學家 葉石濤

Tainan is a good place for having dreams, working  
, falling in love, getting married  
and enjoying a leisurely life.

- Mr. Ye Shitao, eminent Taiwanese writer

# Thank you for listening

감사합니다 Gracías. Salamát Bedankt

Terima kasih धन्यवाद 謝謝 Danke

ありがとうございます Cảm ơn bạn Asante

