EcoMobility World Festival and Congress 2017

Smart Mobility & Smart Transportation in Tainan

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Ⅰ. Introduction

Ⅱ. Smart Transportation in Tainan

Ⅲ. Smart MaaS in Tainan

Ⅳ. Conclusion
About Tainan

- Area: 2,191 km²
- Population: 1.88 m
- Density: 859 /km²
- 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 Diverse Ecology

Capital of Delicacies

Capital of High Technology
Challenges & Opportunities

IBM Smart City Challenges

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

4G Smart City Projects

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

ICF Smart 21

2017: The “Smart 21” award from ICF contest.
The Smartest Ancient Capital

Tainan
The smartest ancient capital

- Smart City Operation Management Center
- Disaster Prevention
- Smart Tourism
- Public Health Management
- Mobile Learning
- Smart Transportation
I. Introduction

II. Smart Transportation in Tainan

III. Smart MaaS in Tainan

IV. Conclusion
Framework of Smart Transportation

Smart Traffic

Smart Information

Smart Bus

Smart Sharing

Smart Parking

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.
2. Integrated Regional Traffic Control System

**Purpose**
- Reduce the recurrent congestion.
  - In the boundary area of freeway interchange.
  - In the urban arterial.

**Practice**
- Detour guiding:
  - Detect the traffic flow.
  - Congestion analysis.
  - Detour information release through CMS.
- Adaptive signal control:
  - Automatically adjust signal according to real-time traffic flow.
- Facilities: VD(25), CCTV(8), CMS(10)

**Profit**
- Improving 13-35% average travel time in 3 interchanges.
3. 4G Smart Bus Service

**Purpose**
- Provide “Real-time Bus Information” via 4G high speed network.

**Practice**
- 400 4G onboard units.
- 904 4G smart bus stops.

**Profit**
- All 400 onboard units and 904 smart bus stops are now providing free Wi-Fi hotspot service.
- Improve transmission quality and reliability of smart bus system.
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**
- Cheep, simple and easy-use.
- Provided at all 4,000+ bus stops.
- English information also available.
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.
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**
- 1st bus priority system for non-exclusive bus lane system in Taiwan.
- Reduced 10% average travel time for all bus lines.
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.
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.
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

**Purpose**

- Provide decision makers with integrated information to solve multiple traffic problems.

**Practice**

- Integrate data into a cloud platform:
  - Smart Traffic
  - Smart Public Transportation
  - Smart Parking
  - Smart Sharing
- Data visualization.

**Profit**

- Provide real-time information:
  - Traffic
  - Parking
  - Bus
  - Bike sharing
- Smart decision making.
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Process of Smart MaaS in Tainan
The Innovation of Mobility as a Service

Integrated Service Platform (Resource Sharing Mechanism)

Double Effects: Scale Return of Economy and Sharing Economy

Current Travel Behavior Pattern: Private Travelers

Accessibility: door to door

Convenience: Seamless in Time and Space

Economy: Cheap Fare

New Travel Behavior Pattern: MaaS and Public Transport Rider

Customized Travel Packages

Demand Side: Travel Behavior Changes

Lowered Travel Fare

Lowered Travel Fare

Supply Side: Innovation of System and Operation

Subsidy Mechanism

Central & Local Governments: Regulation/Organization/Budget

Ticketing Box Revenue: Ticket/Finance/Telecom

Service Procurement

Sponsorship Mechanism

Public and Private Transportation Service Providers:
- Rail Transport: MRT, LRT, HSR, Rail
- Surface Transport: City & Intercity Bus
- Rental Service: Taxi, Coach, Car Rental
- Pooling Transport: DRTS, Commuter Bus, Private Vehicle Sharing
- Sharing Transport: Bike Sharing, Motor Sharing, Car sharing

Business Enterprises

Lowered Operation Cost

Integrated Service Platform (Resource Sharing Mechanism)

Economy:
- Cheap Fare

New Travel Behavior Pattern: MaaS and Public Transport Rider

Demand Side: Travel Behavior Changes
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大道之行也，天下為公
選賢與能，講信修睦
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
貨惡其棄於地也不必藏於己，力惡其不出於身也不必為己
謀閉而不興，盜竊亂賊而不作，故外戶而不閉

Integrating all public transport modes as a whole for public using and personal sharing
Choosing the best efficient tour for the harmony of transportation system
Providing customized travel packages to meet personal travel demand
Lessing personal vehicle utilization and creating transportation resources sharing
proving seamless transportation services through the coordination between different modes in the transportation system
Culture in the Heart, Smart for the Future
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
Terima kasih
ありがとうございます
Gracias.
Salamat
Bedankt
Danke
Asante

धन्यवाद
謝謝
Cảm ơn bạn