MaaS Development in Taiwan

S.K. Jason Chang, Ph.D.
Professor, National Taiwan University
Vice President, ITS Taiwan
skchang@ntu.edu.tw

Sept 16, 2018
Agenda

1. Background
2. MaaS Service Concepts
3. MaaS in Taiwan
4. APP Functions and Trials
5. Vision & Future Development
ITS in Taipei & Taiwan

- **Taipei**: 3,000 sq km, Population 7 mi
  - Car- 2.5 mi, Motorcycle-3.2 mi
  - MRT 136 km + BRT 60 km
  - Bike Sharing: 33,800 bikes w/ 820 stations
  - Policy: **Safe, Green, Smart and Shared**

- **Taiwan**: 36,000 sq km, Population 23 mi
  - Car- 7.2 m, Motorcycle- 13.8 m
  - Mobile phone penetration rate: 113.2% (SP: 80.2%)
  - 100% GPS-Bus
  - 94% e-tag car; 75% e-Taxi
  - 6.5 Mi. Smart Card Issued; 92% e-payment PT
  - 18/22 Cities with Traffic Control Center

Public Transport Information Sharing Platform PTX

- Freeway: 1,000 Km, ETC- **All MLFF Distance-based Charge and Smart Control Centers**
- High Speed Rail: b/w Taipei and Kaohsiung (345km) 90 min
Smart Sharing Systems of Bike, Scooter / Car

**YouBike**
- Priority: Less MRT coverage area and parking supply shortage districts
- Electric motorcycles
- gogoro and WeMo

**U-Motor**

**U-Car**
- Coordinate with car purchasing limitation and public housing
- Rental stations at public housing and public parking lots
- Electric vehicles/ Personal Mobility Devices

Source: Zipcar
Source: car2go
ITS National Plan 2017-2020

ITS⁵- Safe, Smooth, Seamless, Sharing, Sustainable

• 6 Programs
  • Smart Traffic Safety Program
  • Smart Integrated Corridor Management Program
  • Rural Area ITS Applications
  • MaaS (Mobility as a Service)
  • Connected Vehicles and Automated Vehicles
  • ITS R&D
MaaS Service Concepts

1. MaaS: Manage and master travel services via a digital interface (e.g. App), which meets the needs of each consumer on mobility

2. To solve the problem of the gap and service shortage of public transport and to reduce travels by private motorized vehicles.
MaaS Requirements

- A **wide range of transport modes** are available in the city;
- Majority of the transport operators provide **open data** including real-time data to a **third party**;
- Majority of the transport operators allow a **third party to sell their services**;
- Transport operators **offer e-ticket or multi-media payment to access their services**.
- Behavior Change Approach
MaaS in Taiwan

Policy, Research and Planning: 2015~2016
Design & Trials: 2017~2018
Implementation: 2018~

The government acts as enabler

Mature ICT Technology

Mobile APP + E-ticket Online Payment

One-stop service

Taipei-Yilan Corridor MaaS Project

Kaohsiung MaaS Project

Train + MRT + Light rail + Bus + Ferry + Taxi + Ride Sharing + E-Bike + Bicycle

Integrated service

+ Feeder Services

The government acts as enabler

Mobile APP + E-ticket Online Payment

One-stop service

Taipei-Yilan Corridor MaaS Project

Kaohsiung MaaS Project

+ Feeder Services

Integrated service

MaaS
Challenges for Taiwan MaaS Projects

Taipei: Population density 9,897 Person/sq.km.
Public transport market share 42.8%

Yilan: Population density 213 Person/sq.km.
Public transport market share 10.3%

Kaohsiung: Population density 942 Person/sq.km.
Public transport market share 9.3%

Public Transport is the key

- Lack of integration and seamless connection among public transport services.
- High proportion of private car travel in this corridor.
MaaS for Taipei-Yilan Corridor

1. The implementation area includes Taipei City, New Taipei City and Yilan County. Yilan County is the most popular recreation destination in North Taiwan.

2. This corridor: daily trips 160,000 on the weekday; 255,000 on the weekend.

Private vehicle use accounts for 61.2%.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taiwan Railways</td>
<td>2.90%</td>
</tr>
<tr>
<td>Highway bus</td>
<td>13.90%</td>
</tr>
<tr>
<td>Tour bus</td>
<td>13.90%</td>
</tr>
<tr>
<td>Private car</td>
<td>61.20%</td>
</tr>
</tbody>
</table>

3. The high percentage of private car travel causes congestion problem that needs to be solved.
1. Intermodal journey planner & bundled monthly ticket for daily commuting users;
2. Informed travel time and alternative routes for travelers between Taipei-Yilan;
3. Integrated public transport and various feeder services in Taipei-Yilan corridor.
Development of MaaS App
Your MAJI-隨時陪伴你的好朋友
Your “Very Good Friend”

- Partners and Consortium
  - ChungHua Telecom
  - lisi (IT+OT)
  - KingwayTek (3D Mapping)
  - Public Transport Operators (TaiRail, Freeway Bus, City Bus, taxi...)
  - EasyCard (Multi-Media Payment System)
  - Research Institutes
APP Features

1. Powerful engine for transfer & journey planning, offering optimal departure time, routes and modes

2. AI-based user preference learning and analysis platform

3. Demand-responsive Personalized travel Secretary

4. Provide special offers/ discounts to encourage private vehicle drivers to drive at off-peak times or alternative routes

5. Aggregate data from a variety of sources and logistics into an EC platform
Main Keys

Journey Planner
- Transfer planner
- Event Notification
- Personal Secretary
- Item classification

EC Platform
- Shopping Cart
- Checkout

User Behaviour Learning Mechanism
- User preference analysis and learning
- Personalized travel advice

Offer the most optimal route
Dynamic Information Push Notification
Demand-responsive Personal Secretary
Provide bundle services, incl dining, accommodation, shopping and transportation
Aggregation of data from a variety of sources and logistics
Online checkout and billing
A Scenario...

On Line Information and Trip Planning

- Multi-media Payment:
  - Travel:
    - Ticket
    - N Day-pass
  - Food, Hotel, Tourism, Gifts: Coupon/Privilege

Validation of Ticket and Real Time Travel Information

- APP and Multi-payment:
  - QR code Model
  - APP Travel Information
  - Road Traffic Information
  - Other Benefits (LBS)
Trials and Implementation (1/3)
Trials and Implementation (2/3)
Trials and Implementation (3/3)

Assistant

Recomd Spots

Ticket Magt

Center
UMAJI Trials and Alliance

2018/01 Internal Trials
- 功能亮點: QR code 驗票核銷機制、國道旅行時間預測、出發前提醒

2018/02 Open for the Public
- 功能亮點: 弾性票價設計(不同票種 優惠票)

2018/04 Spring Festivals
- 功能亮點: 國五壅塞時間提醒、公車動態資訊

2018/08 Summer Water Festivals
- 功能亮點: where to go，即時路況資訊、達人推薦、任務牆、食宿遊購結合、優惠券

<table>
<thead>
<tr>
<th></th>
<th>Local</th>
<th>UMAJI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restaurants</td>
<td>45</td>
<td>11</td>
</tr>
<tr>
<td>Hotels</td>
<td>53</td>
<td>92</td>
</tr>
<tr>
<td>Tourism</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Shopping</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Transport</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>98</td>
<td>129</td>
</tr>
</tbody>
</table>

Total in Alliance: 227
Performance and Expected...

No. of Members

- Inside Trial
- Opening
- Spring Festival
  + 1,600
  Acc: 3,000

- Summer Festival
  • IOS on Line
  + 4,000
  Accd: 7,000

- 2018/10 Press Conf
  • Promotion
  • Incentives, Behavior
  + 25,000
  Accd: 52,000

- 2018/10 Press Conf
  • Promotion
  • Incentives, Behavior
  + 20,000
  Accd: 27,000
Vision & Future Development

**Vision:** The most intimated virtual personalized travel secretary, who provide customized information & one-stop mobility service

1. Integration and Multimodality
2. Green transport options
3. On-Demand transport services

1. Pre-Trip: Planning and ordering services
2. During: Reminding information related with dining, accommodation, travel, shopping and transportation
3. After: Experience sharing and feedback

1. One-Stop Service
2. Smart transfer advice
3. Optimized journey suggestion
4. Reservation services

1. Cross-industry integration service ecosystem
2. Tickets combination and integration
3. Customer Orientated
4. Diversified marketing and promotion events
Thanks

Dr. Chien-Pang Liu
Ministry of Transportation and Communications
chienpang.liu@gmail.com

Prof. S.K. Jason Chang
National Taiwan University
skchang@ntu.edu.tw

More on
. 2019 Smart City Summit Taipei
. 2019 ITSWC Singapore