第六届中法可持续发展城市交通系统论坛(THNS2013)

TDM Strategies and Challenges in Developing Cities
发展中城市推动交通需求管理之策略和挑战

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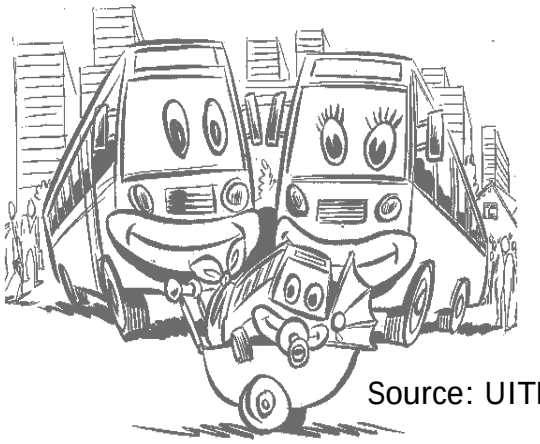
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Agenda大纲

- **Transportation Environment in Asia**
  亚洲城市交通环境
- **Integrated Urban Transport Policy**
  多元整合城市交通政策
- **Key Strategies and Challenges**
  交通需求管理成功策略和挑战
- **Concluding Remarks**
  总结

Asian Cities (and Developing Cities)

- Rapid Urbanization
- Fast Motorization
- Diversity of Land Use
- High Density of Population
- Mixed Traffic Flow Characteristics
- Formal + various & Informal Public Transport and Personal Mobility
- High Fatality in Traffic Accidents
- In-efficient Enforcement
- Institutional Reforms being proposed





Integrated Urban Transportation Policy
多元整合的城市交通政策

- Sustainable Development (永续发展政策)
- Integration of Land Use/Development and Transportation Planning (都市发展/土地使用/交通规划一体化)
- Excellent Public Transport Services (优质公共交通服务)
- Friendly Environment for Pedestrian and Cycling (行人与自行车友善使用环境)
- Comprehensive Expressway and Road Network (完整高快速路网与道路系统)
- Efficient Demand Management (高效率交通需求管理)

BBMW: Green Transport and Health City
绿色交通&健康城市

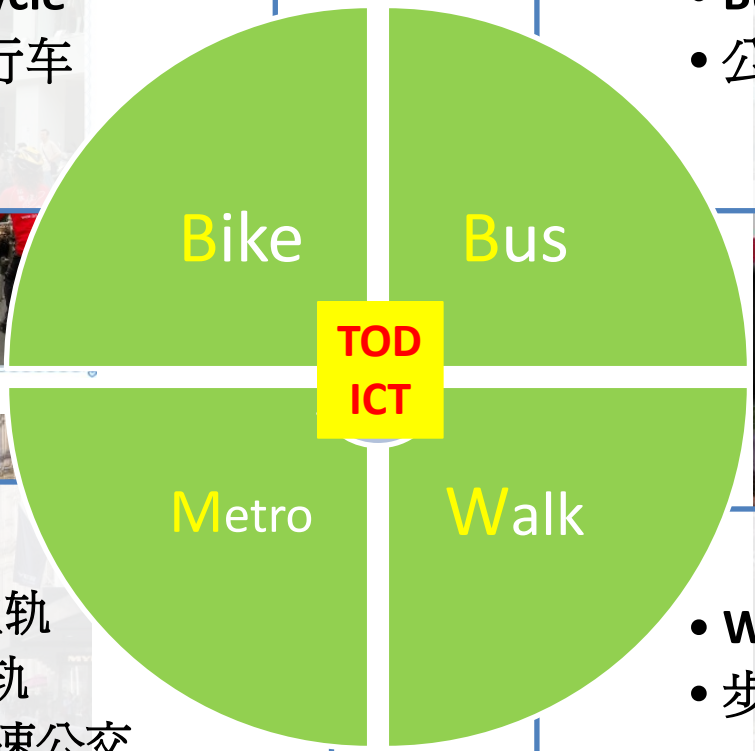
- Integration of Bike, Bus, Metro, and Walk through land use, urban planning, urban design, and urban re-generation as well as ICT

- Bicycle
- 自行车

- MRT重轨
- LRT轻轨
- BRT快速公交

- Bus
- 公共汽车

- Walk
- 步行



交通需求管理
Travel Demand Management

- Objectives
  - Encourage the use of sustainable modes of transport
  - Improve accessibility for all people and services
  - Increase the efficiency of transport infrastructure use
  - Reduce demand for unnecessary travel and provide viable alternatives to car use

Car use should be a choice not a necessity

Travel Demand Management

- A Collaborative Effort
  - Combining non-motorized transport, public transport, parking management and integrated pricing scheme
  - Roles of TOD and ICT
  - Powered by stakeholder involvement and LEADERSHIP

$$TDM = [(Nm + Km + Pt + Ip)^{S}]^{L}$$

- **Nm = Non-motorized transport**
- **Km = Parking management**
- **Pt = Public transport**
- **Ip = Integrated Pricing scheme**
- **S = Stakeholders**
- **L = LEADERSHIP**

Vision in Singapore, London, Munich, Paris, Lyon and Seoul 新加坡、伦敦、慕尼黑、巴黎 、 里昂、首尔等城市发展成功案例

Seoul: Remarkable Public Transport Reform
首尔公交优先成效佳

Lyon: LRT + BRT + Public Bike

TDM Strategies and Challenges
交通需求管理之策略和挑战

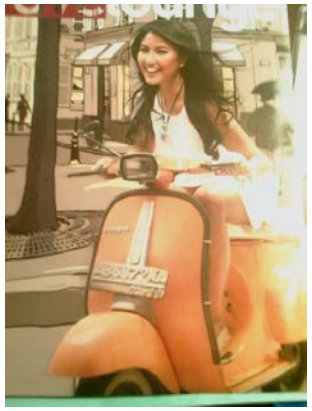
- **Value and Behavior**价值理念和选择行为
- **TOD & Intermodal Station**公共交通组团开发和枢纽站
- **Excellent Public Transport and Integrated Multi-Mobility**優質公共交通和多元整合系统
- **Full Trip Cost and Pricing**出行成本和定价
- **Parking Management** 停车管理
- **Smart Travel and Sustainable Mobility**聪明出行

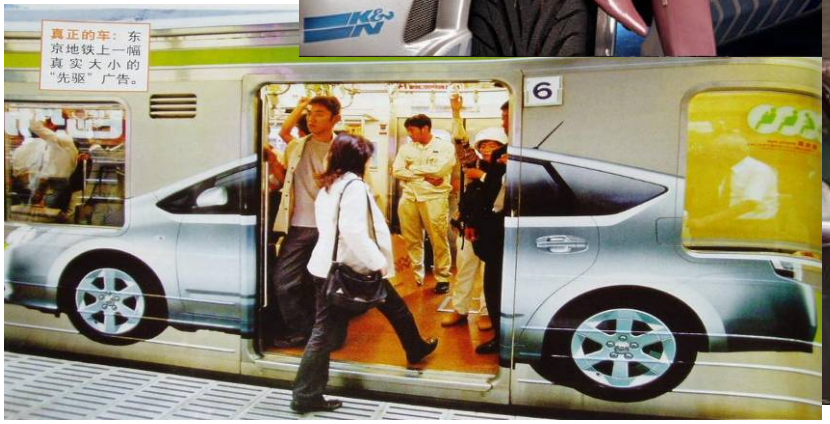
Travel Behavior and Value

认知: 必须改变行为和价值观

-小汽车文化: 影响出行选择?

-为什么没有公共交通帅哥美女??





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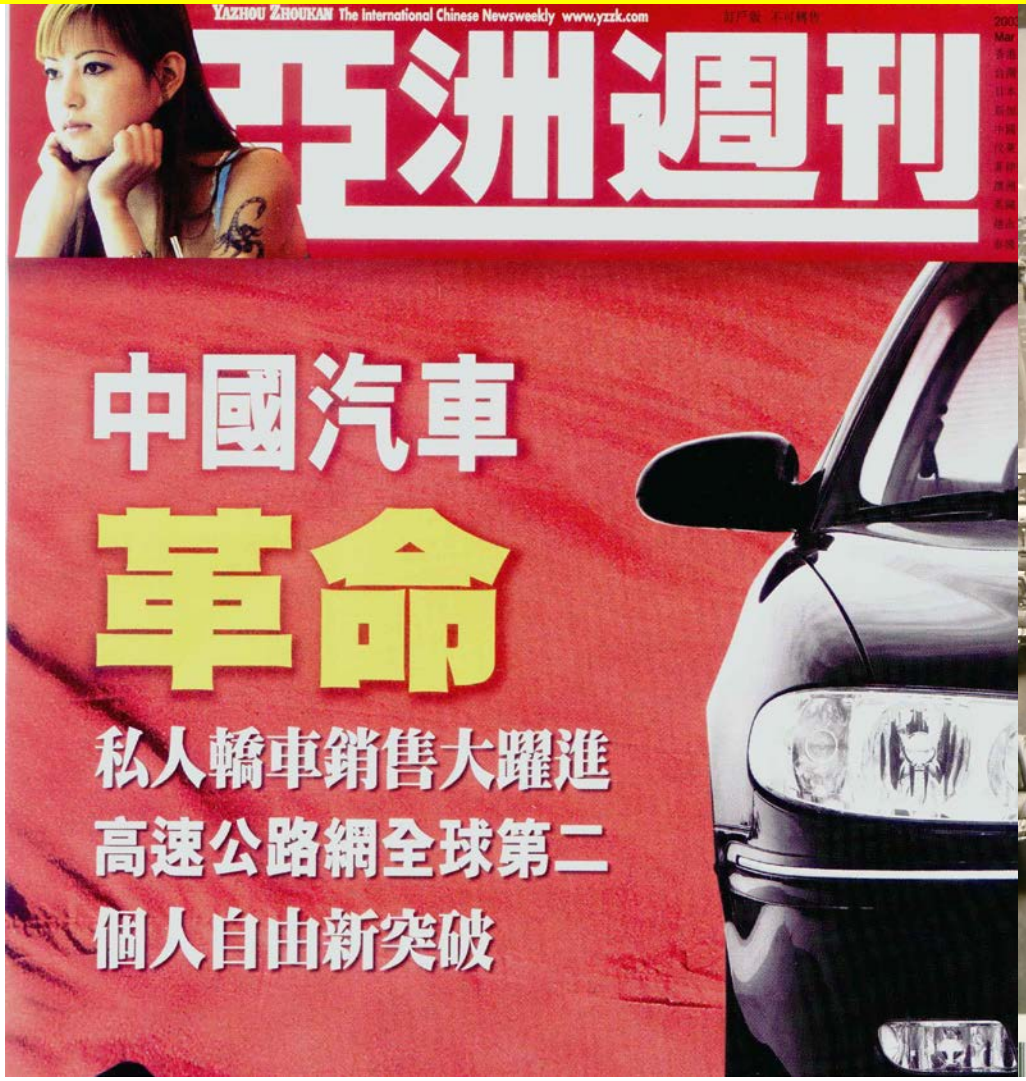
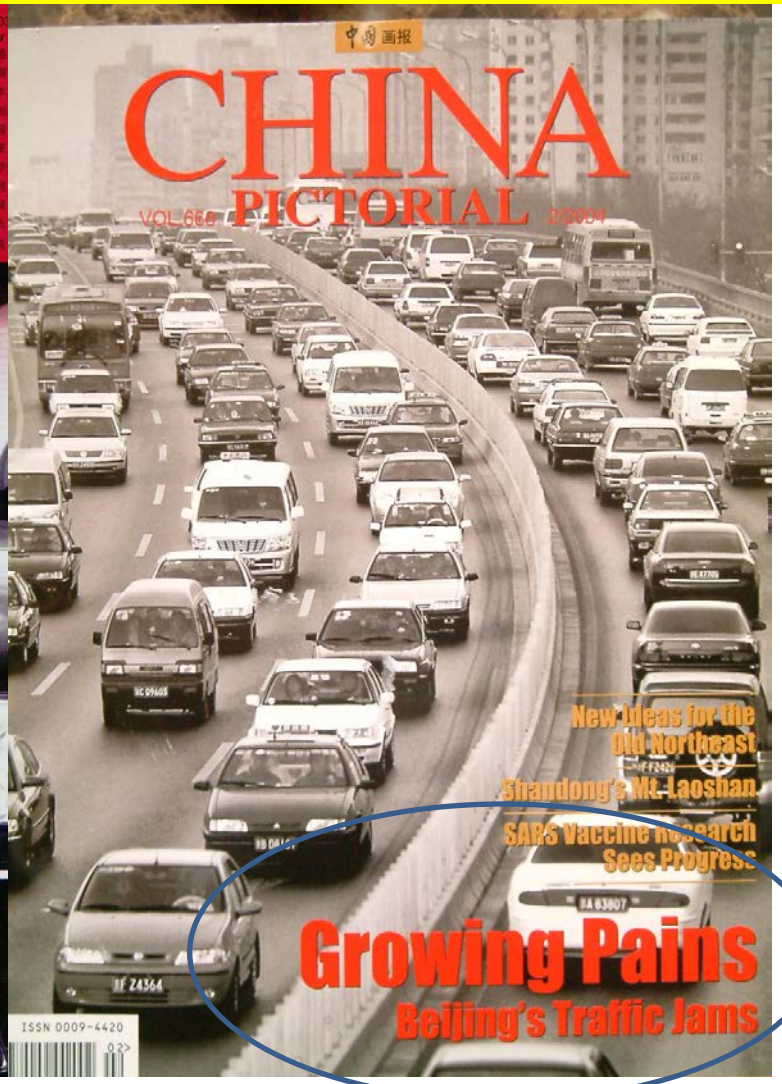
Behavior and Value
认知: 必须改变行为和价值观

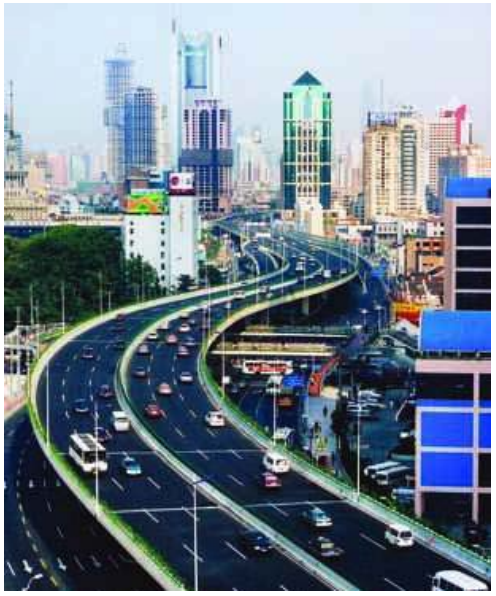
Congestion = Growing Pains???
Personal Mobility = Smart Mobility??

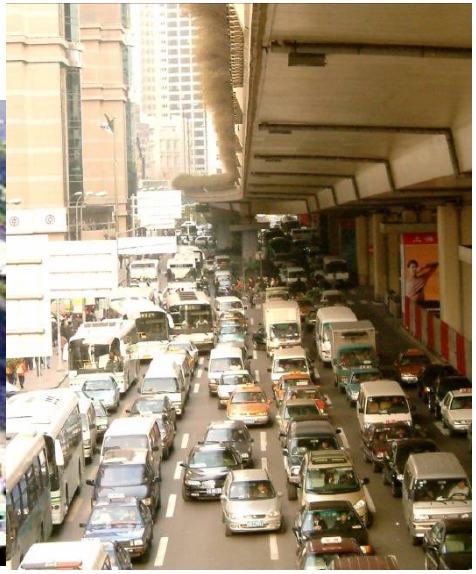




TOD vs. COD
公共交通都市vs. 小汽车都市

1995: Jiang-Kuo Gate Interchange: 2010





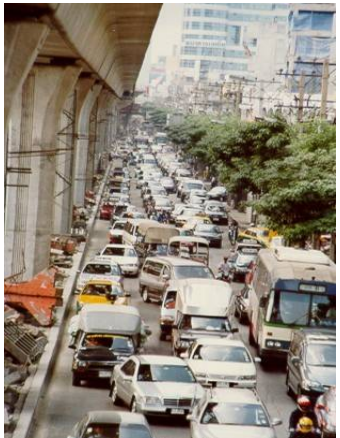
1995: Shanghai E_W Expressway: 2010

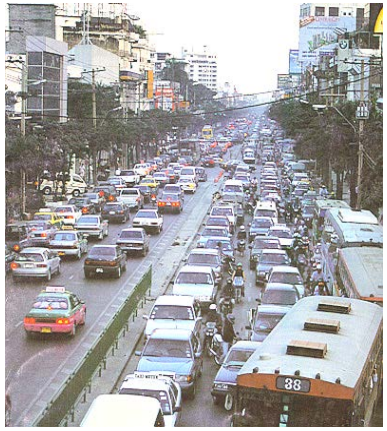
TOD vs. Car oriented Development or Highway oriented Development

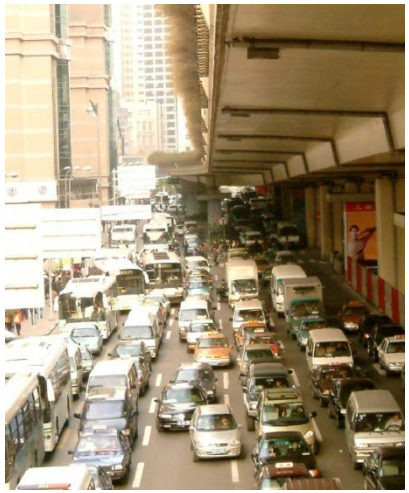
公共交通vs.公路引導城市發展政策

‘..each million we invest into urban motorways is an investment to destroy the city’

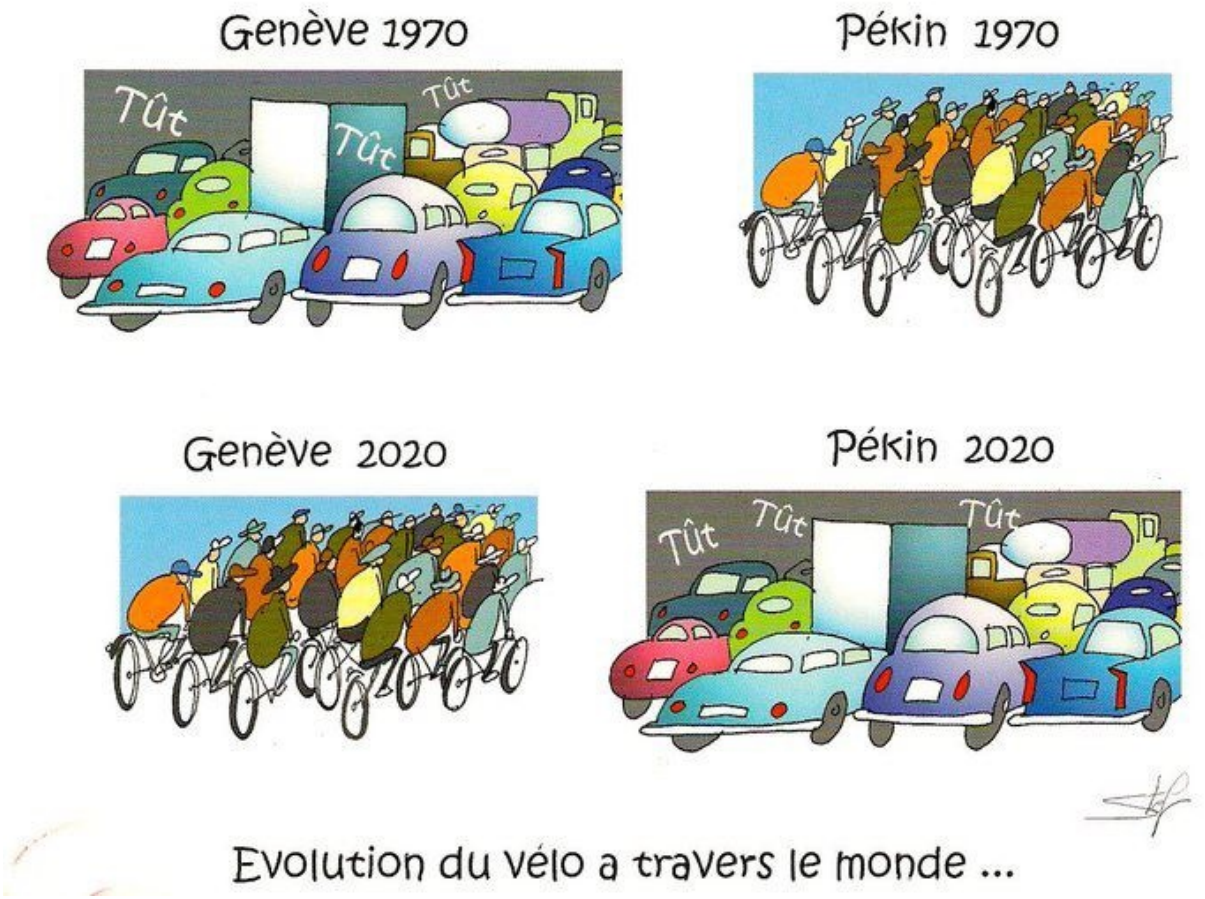
Mayor Hans Joachim Vogel
Munich 1970







Behavior and Value
行为和价值观



World Financial Centers

Hong Kong

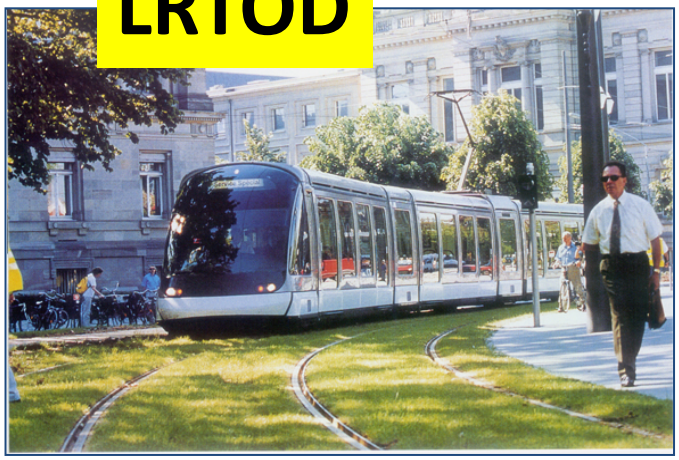
90% NMT + Public Transport

Manhattan

5% Car
7% bus
35% subway
53% bike, walk, work at home

Various Modes in TOD Model
以不同公共交通为骨干的TOD发展模式

LRTOD

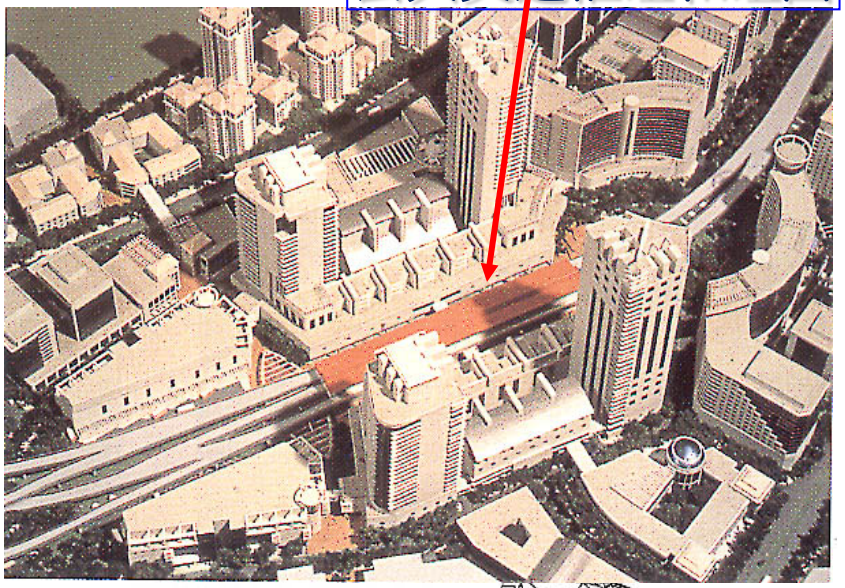


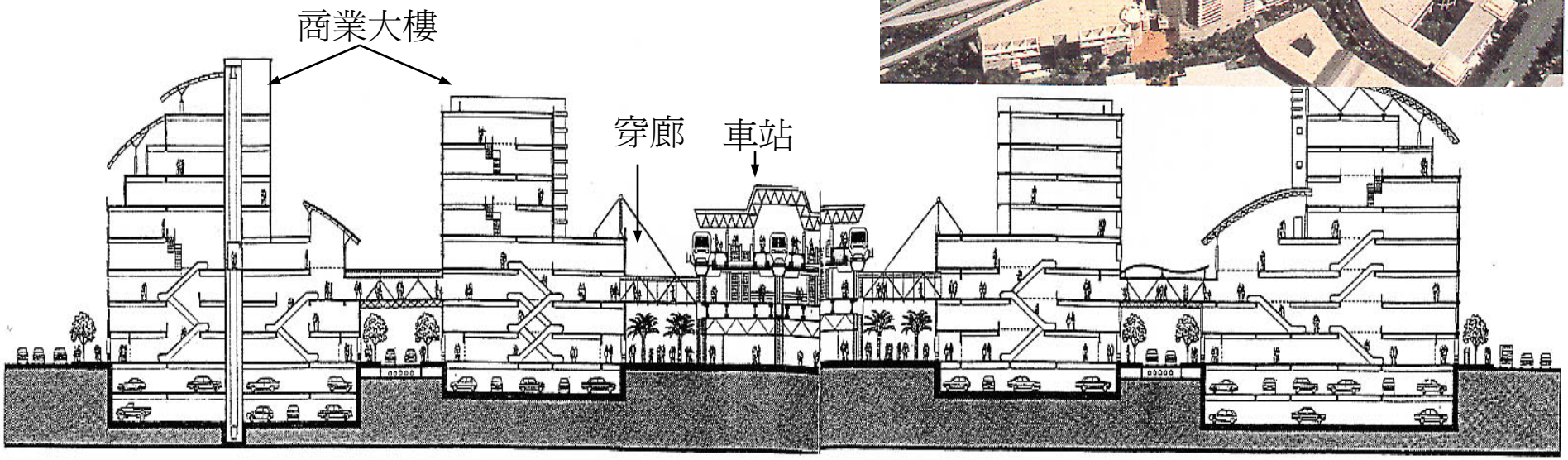
BRTOD

MRTOD

TOD and Transit Village
站区发展策略：公共交通組團

- Intermodal Station枢纽站区功能
- Urban Design 车站与城市新风貌
- Financial Sustainability财务可持续
- Housing Policy 住房政策



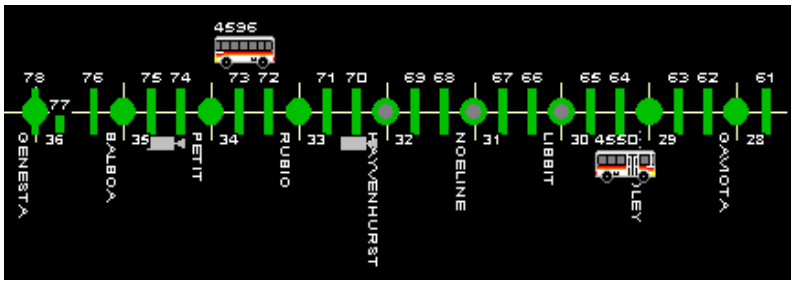


Excellent Public Transport and Intermodal Mobility

提供质优公共交通服务/多元整合的出行方式

Integration
多元公共交通服务:整合

- Land Use and PT Planning
- Network
- Operation
- Last Mile & First Mile
- Ticketing and Pricing
- Information
- Institution



E-Payment 台北悠遊卡

Curb Parking
路边路外停车

Off-street
Parking

MRT 地铁
w/ Mobile Phone

通勤铁路
Commuter
Rail

Bus公交

Taxi出租车

Cable Car缆车

+ Ferry + Regional Bus + Security + e-Purse
+ 渡轮+区域公交车+安保+小额付费……

Confidence on Public Transport:

Door-to-Door: Safe + Secure + Affordable + Comfort + Reliable + Information

门到门整合服务: 安全+合理票价+舒适+可靠+信息

Full Trip Cost 出行成本

- **Total Tip Cost and Social Equity**

  出行成本分析

  - usage, facility, time, external (Pollution, Congestion, Safety…)

- Actually Paid/Should Pay

  实付/应付比例

- **Walk: 100.0%**
- **Bike: 96.6%**
- **Motorcycle: 34.8%**
- **Car: 59.6%**
- **Taxi: 67.8%**
- **Bus: 81.6%**
- **Metro: 89.7%**

机动车辆出行受到社会巨额补贴?

Taxi, DRTS and Sharing

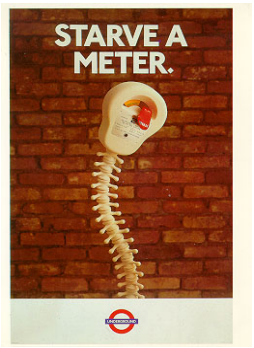
Cloud-Taxi, DRTS and Shared Transport for Low Carbon and Aging Society

智能出租车与小众公共交通

- 运用智能技术提供安全可靠的优质服务Applications of ICT for safe and reliable taxi services
- Web-Taxi and Cloud-Taxi
- DRTS需求反应公共交通服务

Bring Parking under Control
停车需要管理：靜態交通和動態交通

- **No Free Parking**
  停车必须付费
- **Pricing based on Time and Location**
  依「时间」、「区位」订定费率
- **Off-Street >> Curb Parking**
  路外为主、路边为辅
- **Public Transport+ Parking Management**
  公共交通＋停車管理
- **Market Schemes**
  形成市场机制



Cars can be reasonably used for recreation and in off-peak, for tourists, or sharing

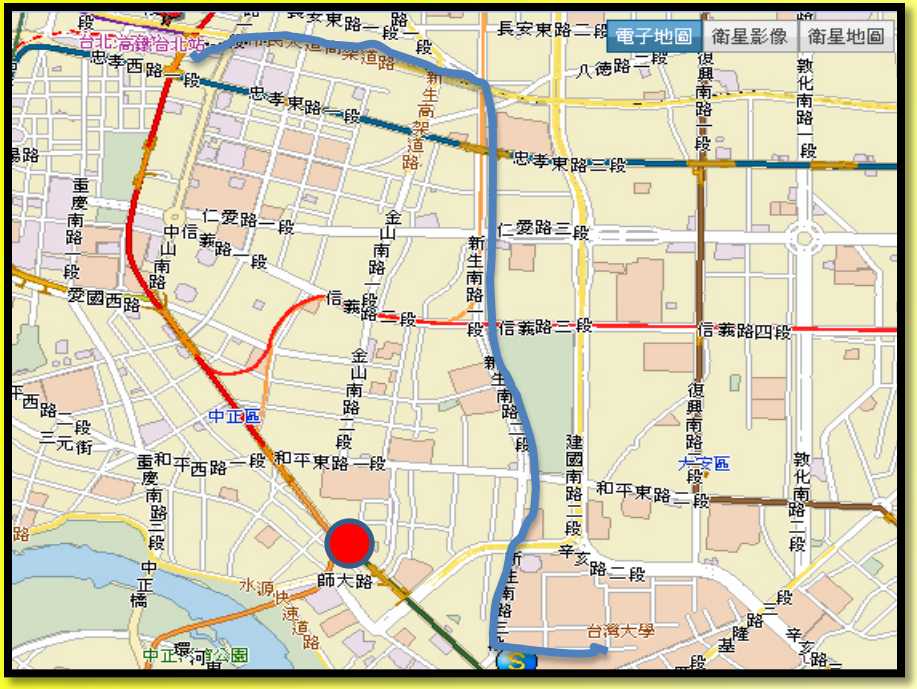
小汽车可以合理拥有与有效使用: 观光, 休闲, 非高峰,共享……

ITS for Smart Travel and Sustainable Mobility 应用智能交通技术聪明出行

- Travelers make the best choice on departure time, route, destination and **mode** based on the real time information and appropriate **pricing mechanism**.
- To provide options/combinations and full information for users.
- Smart Travel and Sustainable Mobility (聪明出行/智慧选择)

Smart Travel and Sustainable Mobility

The Shortest Path for ODs based on Historical or Real Time Information

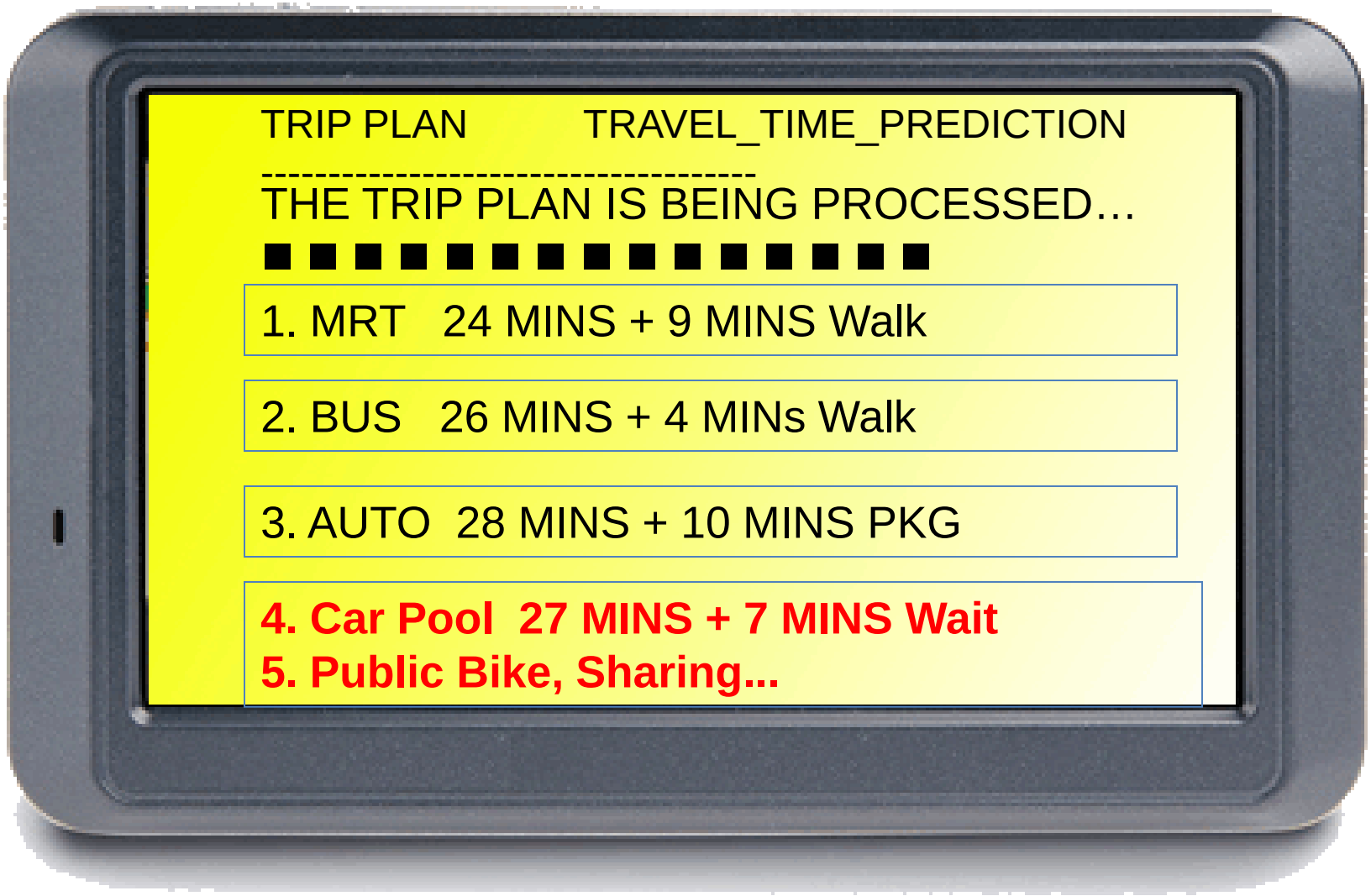


1. Travel Time:
 35 MINS
 + 2 MIN WALK
 Parking Lot:
 A12 $6/hr

2. Travel Time:
 33 MIN
 + 6 MIN WALK
 Parking Lot:
 A10 $5/hr

OBU

We have other smart choices with ITS technologies



There is subway station ……

1. MRT

• DISTANCE ：200M

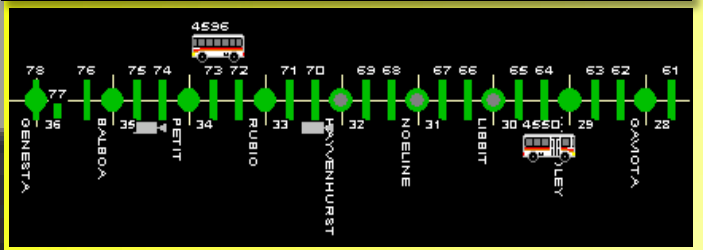
•MRT Line #1： DANSHUI

• STATION-ORIGIN：GORNGGUAN

• STATION-DESTINATION：TAIPEI MAIN STATION

• TIME SCHEDULE：16:20, 16:25, 16:30, 16:35, 16:40, 16:45, 17:00

There are bus stops ……



2. BUS

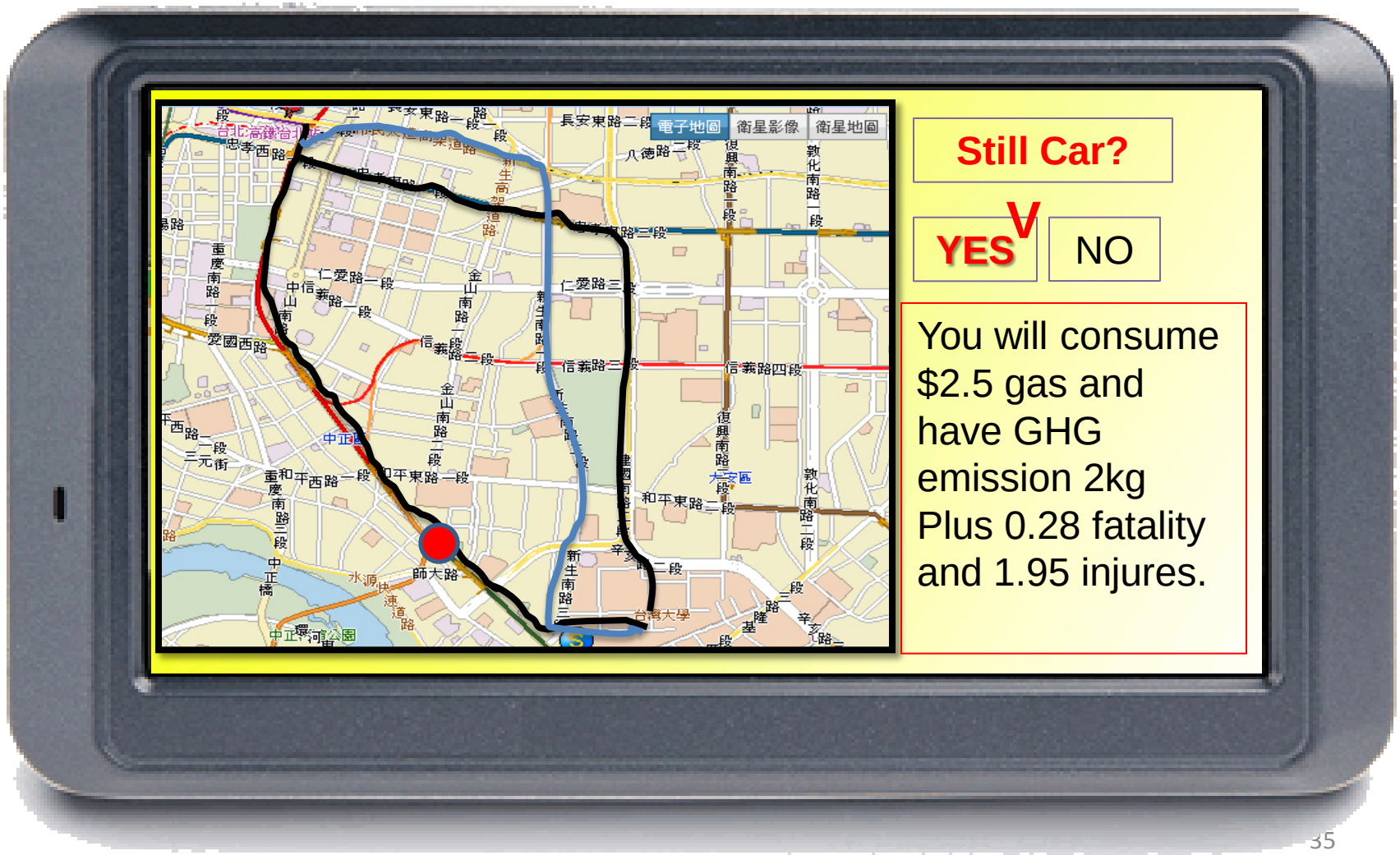
- RT 284：100M
  16:25, 16:35, 16:45
- RT 617： 90M
  16:28, 16:38, 16:46

- BUS STOP-ORIGIN：
GORNGGUAN
(KEELUNG.ST)
Roosevelt Road
- BUS STOP: Every 5~10 min
- DESTINATION：
  TAIPEI MAIN STATION

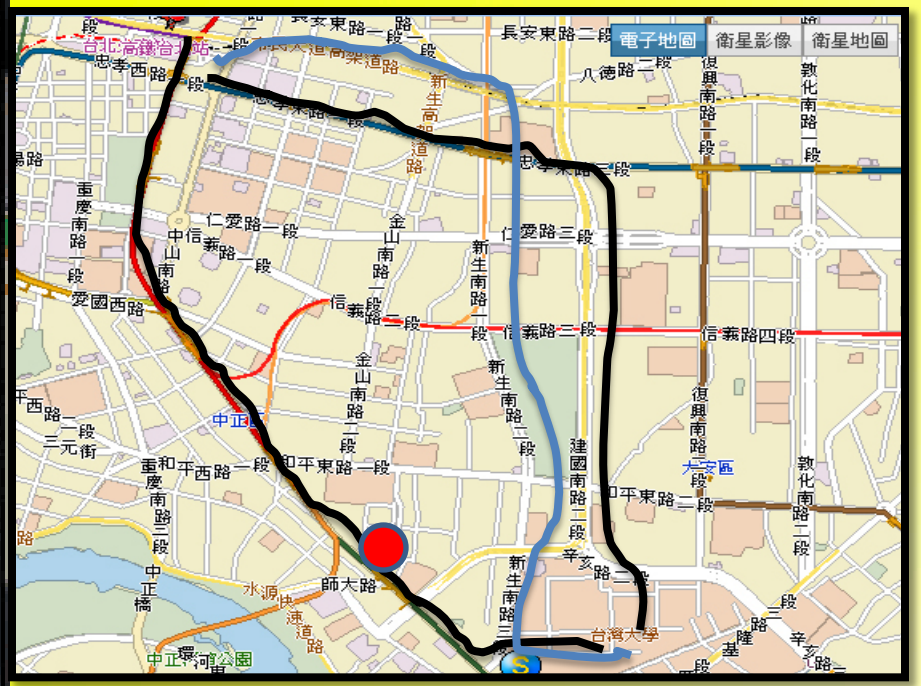
OR, you may select a taxi

Web Taxi or Cloud Taxi……

NO, I would like to have my car!



Have a Safe and Green Journey



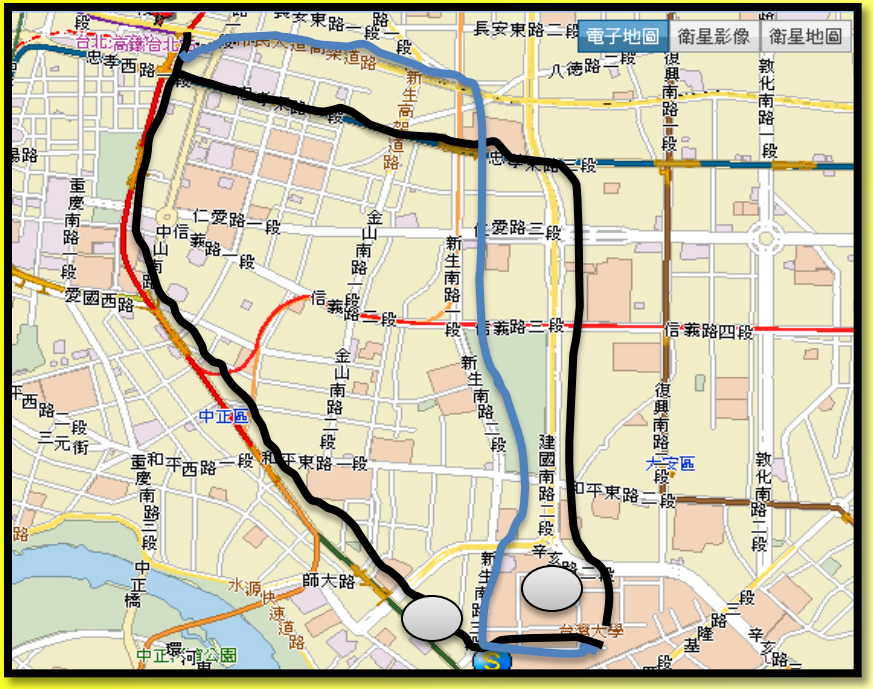
Still Car?

YES V

NO

Pay $10.00
Have a safe &
Green Journey

OR, I have changed my mind…



Still Car?

YES

NO V

Great! You have a discount of 28% for Public Transportation. Enter your smart card number……

Keywords of the Smart Travel and Sustainable Mobility

- External Effect: Benefits and Costs
- Sustainable Energy and Climate Change
- Smart Choices: Time, Spatial, Mode or No Action
- Behavior Change and Logistics
- Safety and Security
- Big Data: Dynamic Information for Customer-made Services and Prediction Capability
- ITS^2: Intelligent Transport for Sustainable Development + Integrated Transport Systems

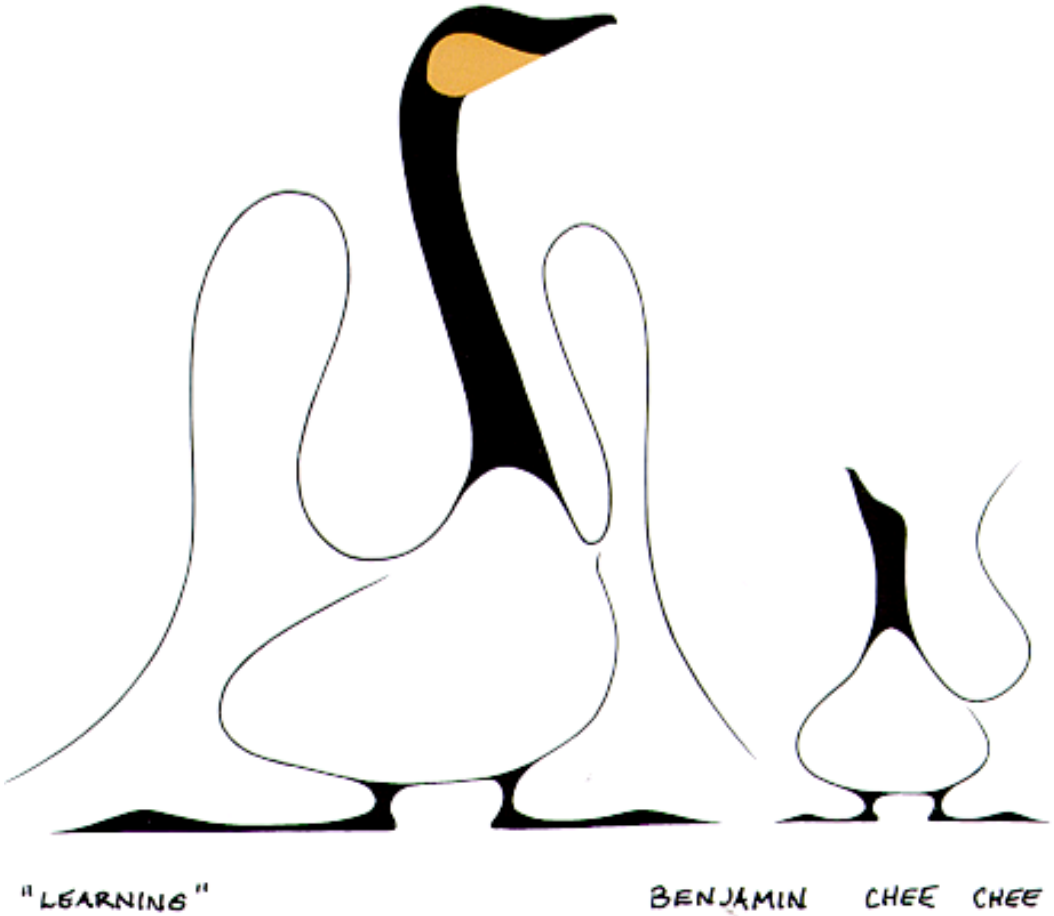
Concluding Remarks 结语

- TDM: A Collaborative Effort

$$TDM = [(Nm + Km + Pt + Ip)^{S}]^{L}$$

  - TOD Policy and ICT Applications
- Public Transport Metropolis
- Full Cost and External Effects
- Choices and Behavior Change
- Push and Pull
- Smart Travel and Sustainable Mobility

Thank You
谢谢



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