

Prospects of ITS Development in Asia

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ITRI Prototyping Competition Award Ceremony

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Agenda

- Features in Asian Cities
- Integrated Transport Solutions for Health Cities
- Myth, Dilemma, and Missing Links
- ITS Role and Strategies
- Concluding Remarks



Asian Cities (and Developing Cities)

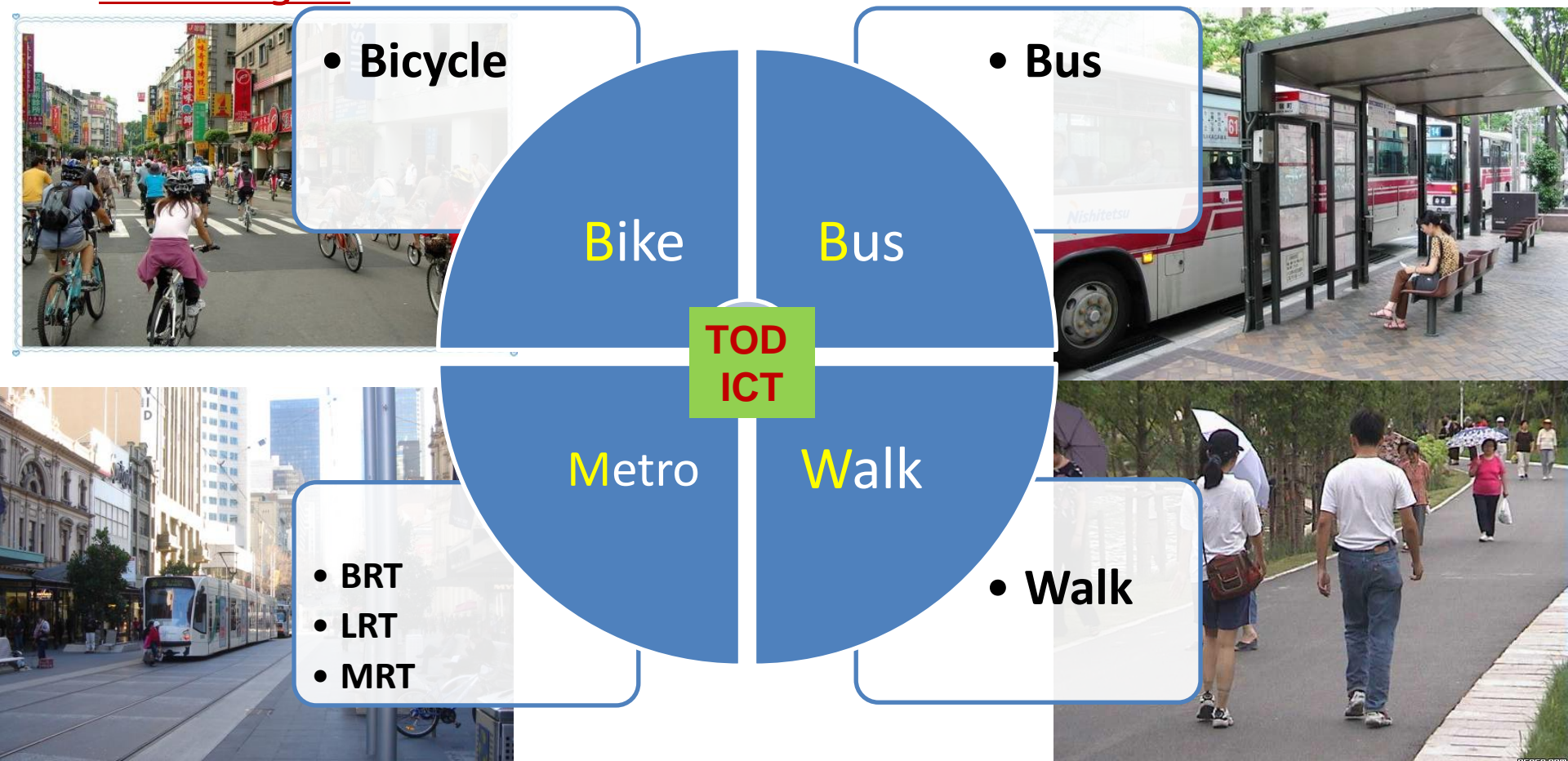
- Rapid Urbanization
- Fast Motorization
- Diversity of Land Use
- High Density of Population
- Mixed Traffic Flow Characteristics
- Formal + various & Informal Public Transport and Personal Mobility
- High Fatality in Traffic Accidents
- In-efficient Enforcement
- Institutional Reforms being proposed



BBMW: Integration³

Green Transport and Health City

- Integration of **B**ike, **B**us, **M**etro, and **W**alk through land use, urban planning, urban design, urban re-generation, and applications of IC technologies



Myth, Dilemma, and Challenges

Excellent Public Bike and BRT in Hangzhou



However, the neighbor cities have no space for pedestrian



World Class Pedestrian Mall in Shanghai



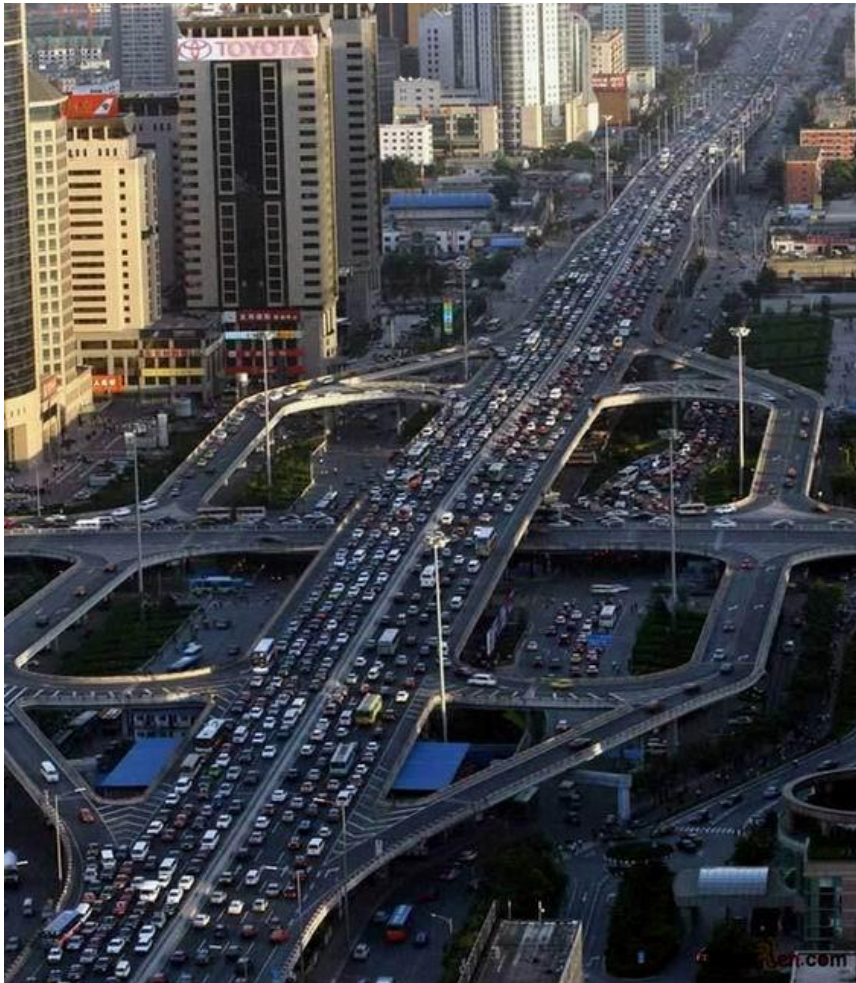
Before and after



Pedestrian Mall and BRT in Beijing

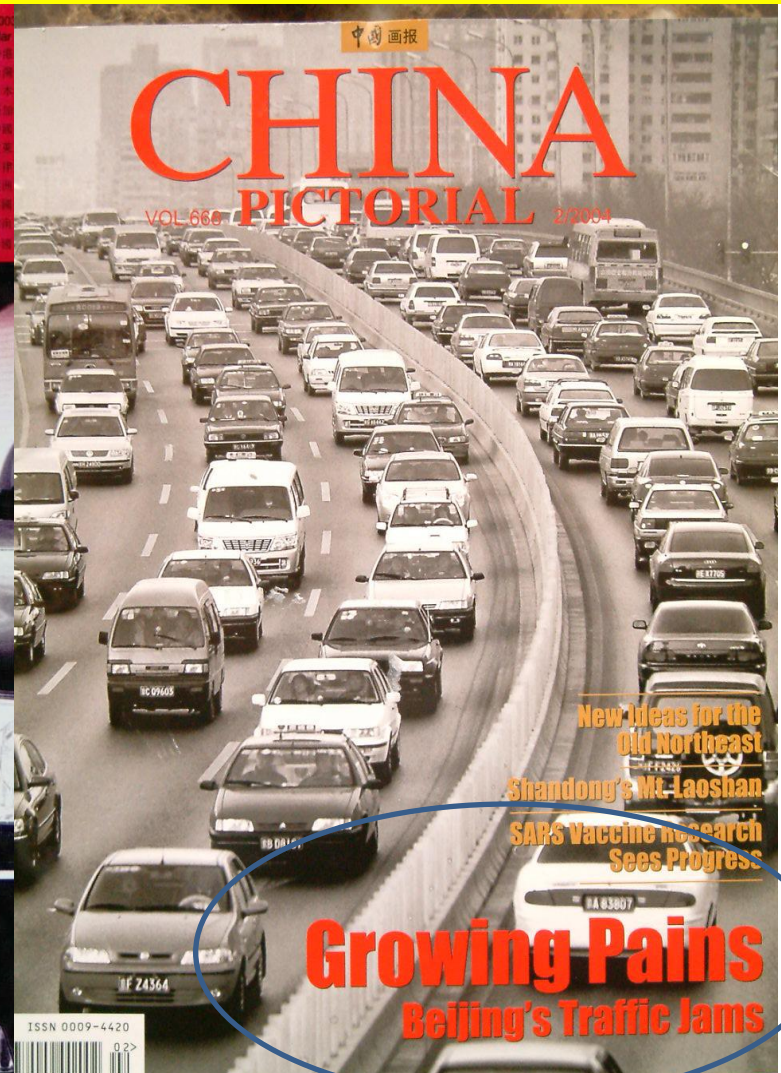


**But, only few blocks away
people are being suffered in
congestion and air pollution**



Congestion = Growing Pains???

Personal Mobility = Smart Mobility??



Influence of Car Culture.....

Why no show girl/boy for public transport?



cn.autos.yahoo.com

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

In Tokyo, 85% trips are Public Transport during peak hours compared with an average of 50% PT.



Car & Motorcycle pay far less than should pay

- Actually Paid / Should Pay

Walk: 100.0%

Bike: 96.6%

Motorcycle: 34.8%

Car: 59.6%

Taxi: 47.8%

Bus: 81.6%

Metro: 89.7%



Personal mobility of using private mode has been heavily subsidized by social resources

Results of Trip Costs for Metro + Feeder Services

- Metro as Trunk Line Plus...
 - Walk-Walk (\$2.22)
 - Walk-Bike (\$2.29)
 - Walk-Bus (\$2.26)
 - Bike-Bike (\$2.26)
 - Bike-Bus (\$2.33)
 - Bus-Bus (\$2.30/trip)
 -
 -
 - Walk-M/C (\$5.07)
 - Walk-Car (\$4.49)
 - Walk-Taxi (\$2.97)
 - Bike-Car (\$4.56)
 - Bike-Taxi (\$3.04)
 - Bus-Taxi (\$3.01)
 - M/C-Bike (\$5.12)
 - M/C-Car (\$7.34)

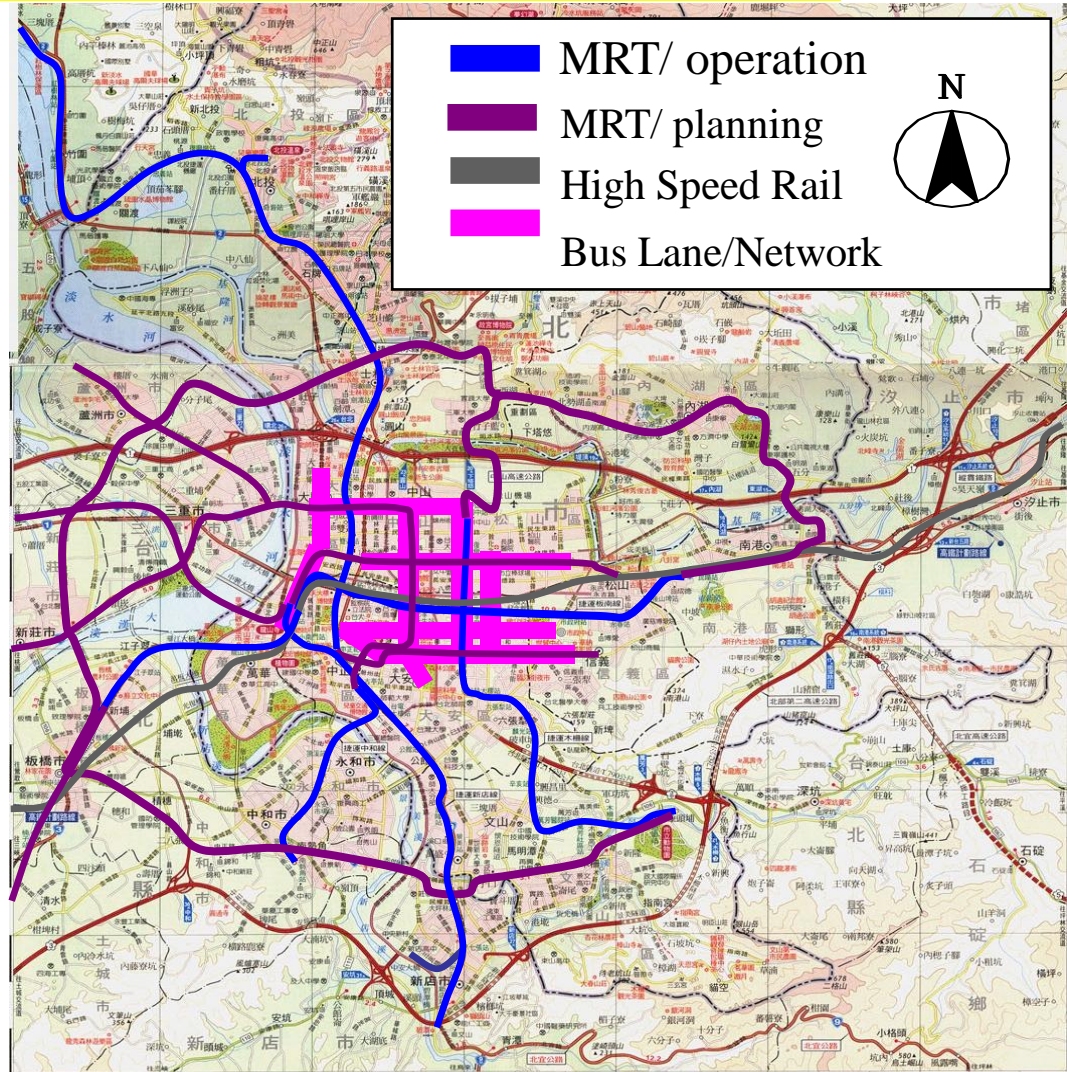


M/C: Motorcycle

All metro trips with walk, bike, and bus feeder services have significant lower trip costs

Lots of cities are still enjoyed in Rail Metro Project

Taipei Urban Rail
- Current 106km network attracts 1.3 mi trips/day, with US\$18bi investment.
- By 2020, there will be 150 km urban rails while the network can only serve 21% of 13 mi total trips!



Out of total 13 mi daily trips, 3.6 mi trips are predicted for a MRT network of 270km

Most developing cities face similar decision

Which Models?

Paris?

London??

Tokyo???

New York????

Question is:
When?



Excellent Public Transport: Alternatives Analysis



LRT: Excellent Experience in European Cities and Melbourne



Lyon: LRT + BRT + Public Bike



BRT: Success in many cities, including megacities, such as Beijing, Bogota, Delhi...



Seoul: Remarkable Public Transport Reform



Missing Links in Public Transport.....

Integration

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



Re-allocation of Road Space for People



Actions on traffic management and parking management



Sustainable Urban Mobility

- A Collaborative Effort
 - Traffic Management + Demand Management + Green Transport
 - Powered by stakeholder involvement and LEADERSHIP

$$\text{SUM} = [(Tm + Dm + Gt)^S]^L$$

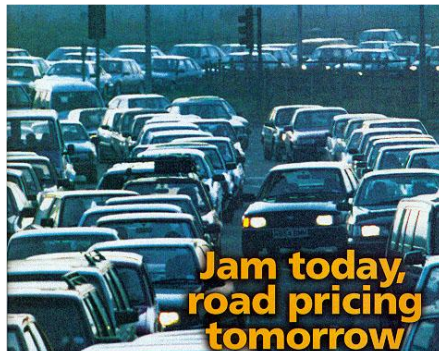
- SUM = Sustainable Urban Mobility
- Tm = Traffic management
- Dm = Demand management
- Gt = Green transport (BBMW)
- S = Stakeholders
- L = LEADERSHIP

Role of ITS

Intelligent **T**ransport **S**ustainability
+
Integrated **T**ransport **S**olution

ITS for Sustainable Urban Mobility

- Travelers make the best choice on departure time, mode, route, and destination based on the real time information and appropriate pricing mechanism and strategy.
- Provide options/combinations and their full information for users.



Focus on Safety, TDM, and APTS in Asian Cities

- APTS: Applying ATIS, ATMS, EPS, AVCSS and management schemes to provide safe, user friendly, reliable, seamless, convenient, high efficient, and sustainable public transport services.
- Sustainability: Environmental, Social Equity, Economy/Finance, and Governance.
- Huge External Benefits and Costs: need to have an Internalization Mechanism.

Contents of Advanced Public Transport Systems

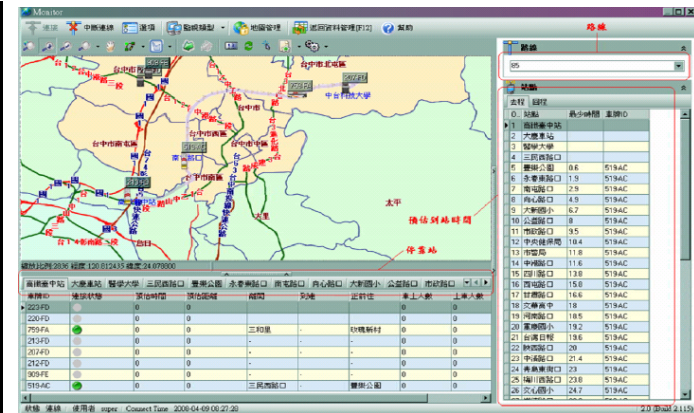
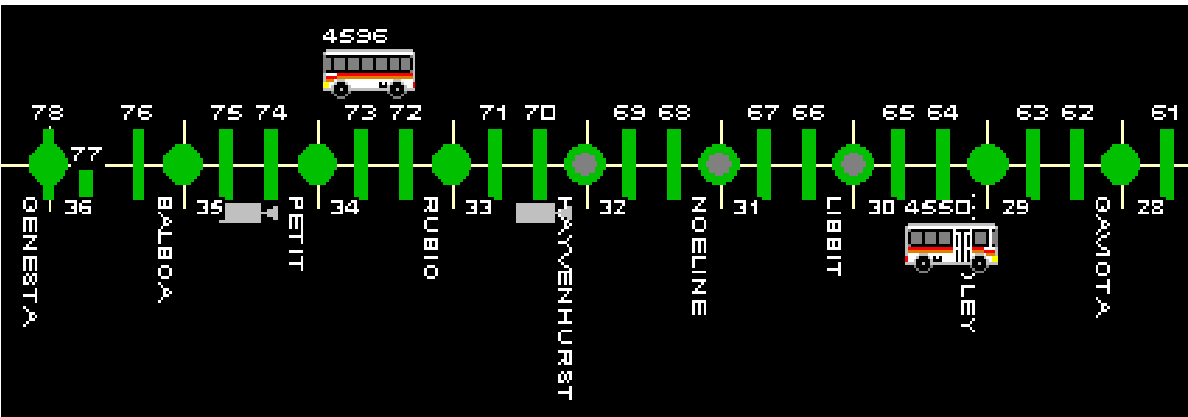
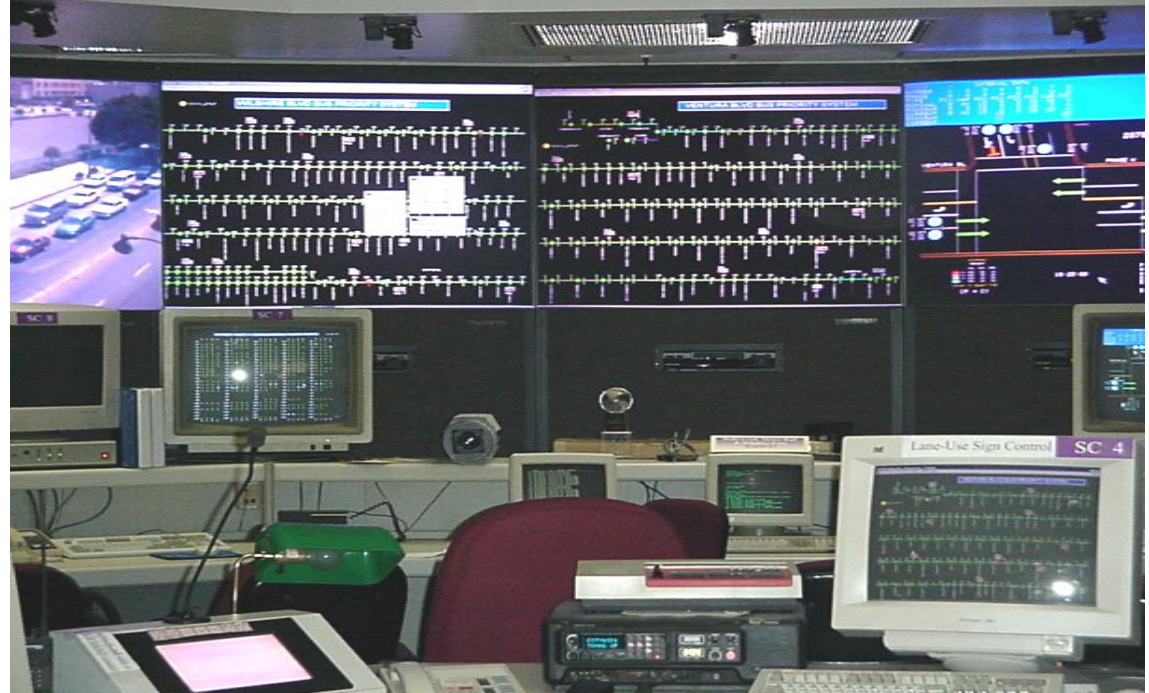
- Passenger Information System
- Operation Management System
- Electronic Payment/Ticketing System
- Safety and Security System
- E-Terminals
- Taxi and Demand Responsive Transit

Operation Management System

- Safety and Monitoring System
- Fleet Management
- Emergency Management
- Vehicle Technologies
- Priority Schemes
- Security



Monitoring and Control

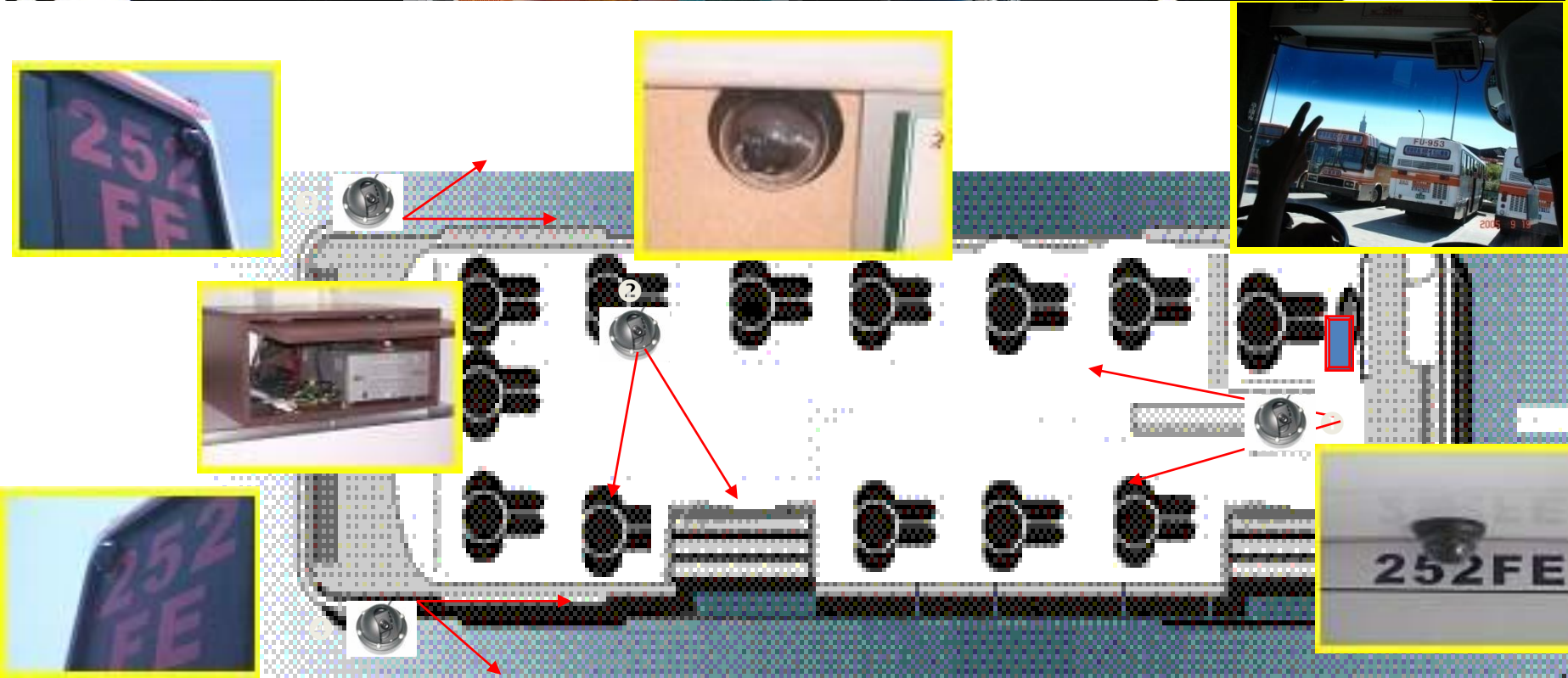


Vehicle Technology

Safe, Comfort, New Energy



Safety/Security for Bus Vehicles



Priority Scheme for Bus Transit



e-Payment/Ticketing System

Ferry



Curb Parking



Off-street Parking

Urban Rail w/ Mobile Phone



Commuter Rail



Bus



Taxi



Cable Car



+ Regional Bus + Security + e purse

GPS Taxi & DRTS

From Web-Taxi to Cloud-Taxi

- More than 20% of Taxi equipped with GPS on board units in Taipei
- Advanced technologies for Taxi Industry and Demand Responsive Transit Services
- Other potential applications: Sharing and Pooling



Continuous, Consistent, and Comprehensive Education and Enforcement

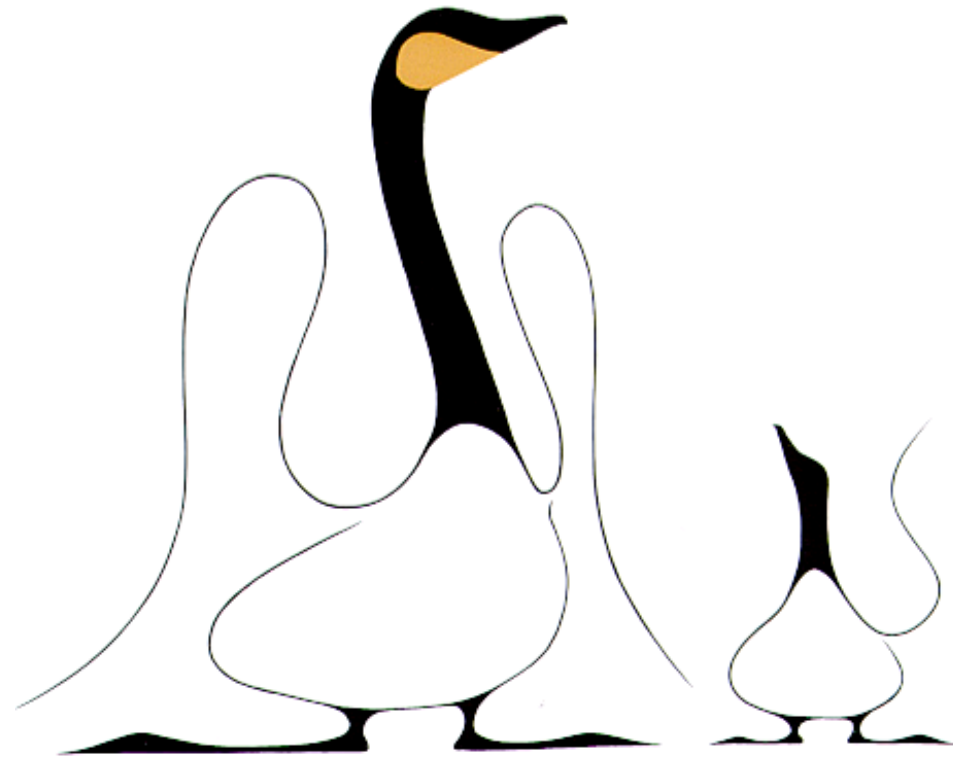


Concluding Remarks

- **SUM = $[(T_m + D_m + Gt_{(BBMW)})^S]^L$**
- Vision and Planning + Political Will
- Localization & Alternatives Analysis
- ITS Focuses for SUM: Safety, TDM, Public Transport, and Enforcement
- Financial Sustainability: PPP or other Business Models
- International Cooperation

Thanks

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"LEARNING"

BENJAMIN CHEE CHEE