

ITS Asia-Pacific Leaders Forum

Smart Mobility in Hong Kong

Ir Steven Lui

President, ITS Hong Kong

Technical Director, Traffic & Transport Planning,
Land Supply / Municipal, Hong Kong, AECOM

28 May 2024



AECOM

Ir Steven Lui, MEng(Hons) MHKIE MIET FITSHK ACGI Accredited NEC4:ECC Project Manager

- President of ITS-HK
- Technical Director of AECOM responsible for project management and delivery of ITS / Smart Mobility projects in Hong Kong and Southeast Asia
- More than 20 years of international experience working in both public and private sectors in London, Dubai, Abu Dhabi, Singapore and HK
- Committee Member of IETHK – Railway & Transport Section
- ESS Assessment Panellist for the I&T Fund, HKSAR Government
- Member of the Smart Mobility Technology (C-V2X) Alliance
- Expert Review Panellist of LSCM
- International Committee Member of IBTTA
- Think Tank Member of Dashun Foundation
- Grand Prize Winner of the HKIE Innovation Awards for Young Members in 2008 – "Automatic Traffic Optimisation System for ITS"



Agenda



Introduction



Strategic Transport Planning in Hong Kong



Smart Road Infrastructure



Smart Transport Services



Future Trends

Introduction

Factsheet: Indonesia vs Hong Kong

Indonesia	7,076 sq-km Greater Jakarta (Jabodetabek)	31.67 M Population of Greater Jakarta	142.18 M Labour Force in Indonesia	6.7 % Population over 65	11.7 M (2023) Annual Visitor Arrival	2.23 M Daily PT Passenger Trips	548,097 km (2022) Length of Public Road	148,262 K Total Number Motor Vehicles
	662 sq-km DKI Jakarta				7 K (2022) Visitors from Hong Kong	19.5% (2023) Commuter Trips on PT In Greater Jakarta	+9.2% Growth in past 10 years	+41% Growth in past 7 years



Hong Kong	1,110 sq-km Land Area	7.33 M Population	3.81 M Labour Force	22.4 % Population over 65	34.0 M (2023) Annual Visitor Arrival	10.52 M Daily PT Passenger Trips	2,193 km Length of Public Road	925 K Total Licensed Motor Vehicles
	280 sq-km Built-up Area				70% Within 500m of Rail Station	252 K Visitors from Indonesia	90% Daily Passenger Trips on PT	+5% Growth in past 10 years

Smart Mobility Achievements in Hong Kong



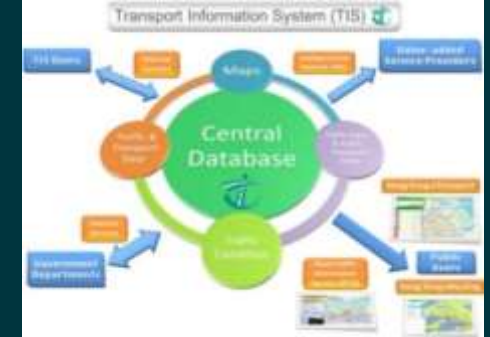
Traffic Control and Surveillance System



Traffic Control Centres



Traffic and Incident Management System



Traffic Information System



Traffic Detectors on Selected Strategic Routes



Toll Rationalisation Study



Area Traffic Control System



Autonomous Shuttles



Free Flow Tolling System (FFTS) Proof of Concept (POC) Study



Study on Design and Application of In-vehicle Units



Data Acquisition System (DAS) for Free Flow Tolling System (FFTS)



Toll Information Display System (TIDS)

Source: Transport Department

Strategic Transport Planning in Hong Kong

Conceptual Spatial Framework for Hong Kong 2030+

《香港 2030+》期望展示香港作集約高密度可持續發展的潛力，成為領先全球的典範。
 Hong Kong 2030+ seeks to showcase the potential for Hong Kong to lead by example as a global exemplar of compact high-density sustainable development.

已建設區人口密度 Population Density in Built-Up Area

總土地面積
 Total land area
1,114 平方公里
 km²

已建設區總面積
 Total built-up areas
280 平方公里
 km²



全港 Whole territory
 約每平方公里
 About **26,700** 人
 person/km²



九龍 Kowloon
 約每平方公里
 About **60,500** 人
 person/km²



港島北 Hong Kong Island North
 約每平方公里
 About **53,000** 人
 person/km²

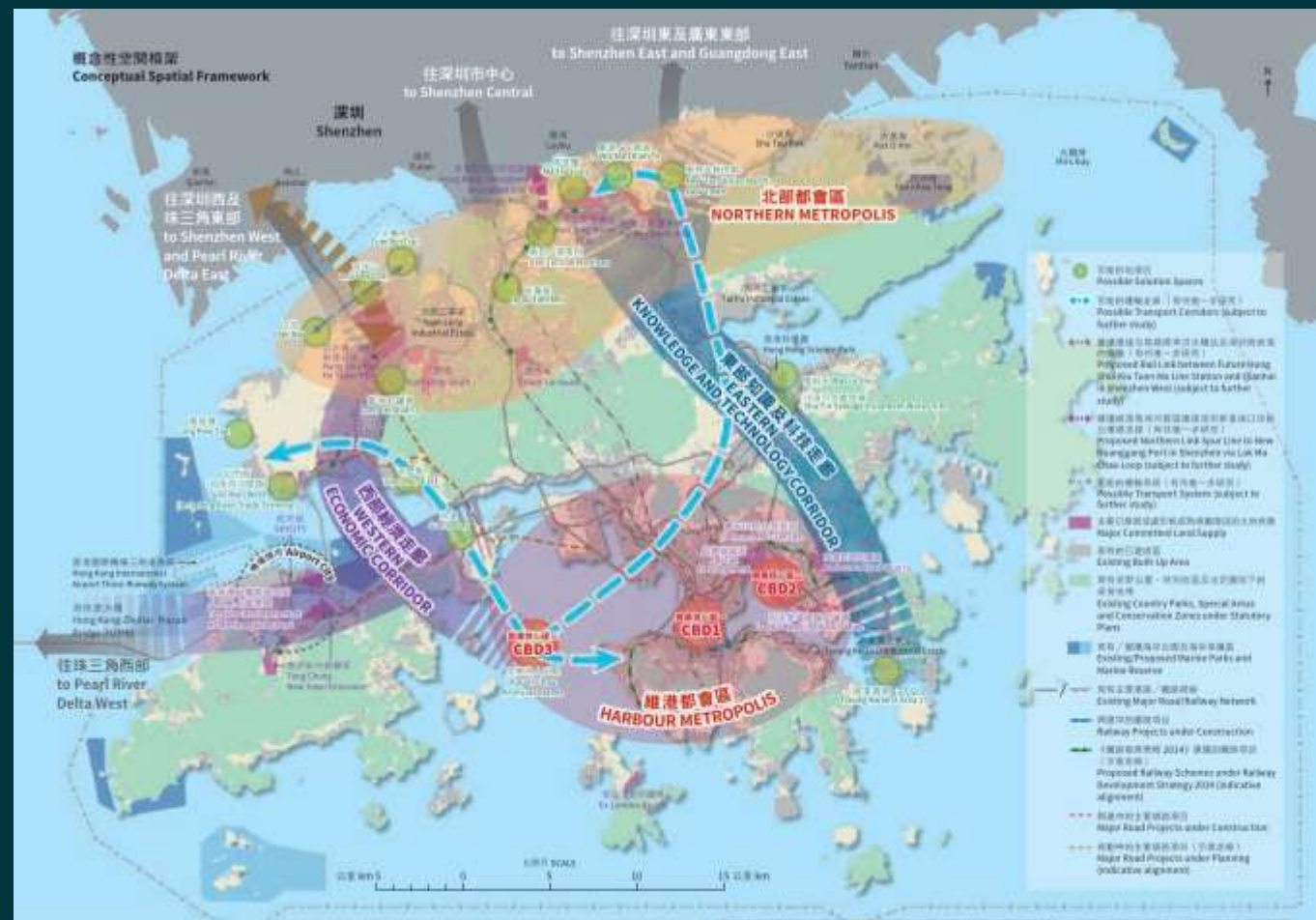
資料來源：規劃署 Data Source: Planning Department (PlanD)



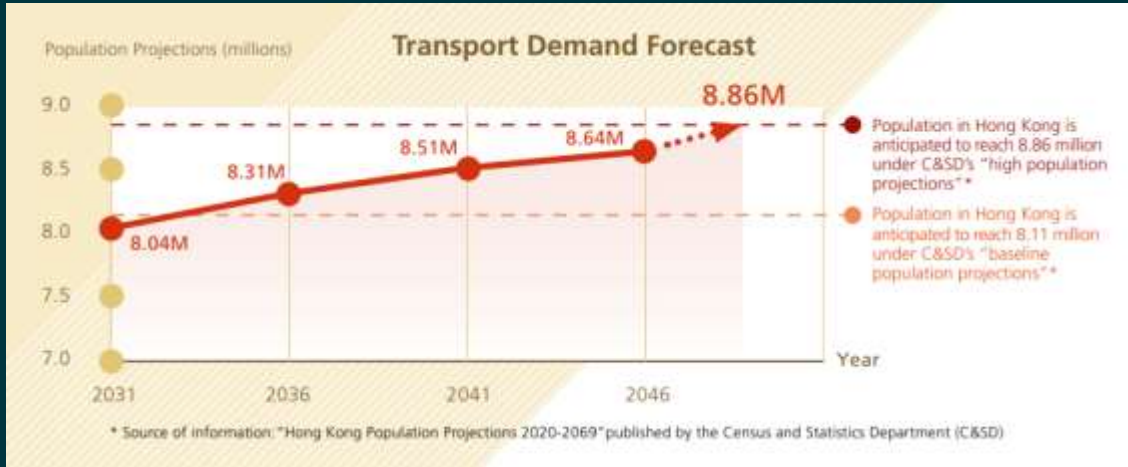
兩個都會區
 Two Metropolises



兩條發展走廊
 Two Development Axes

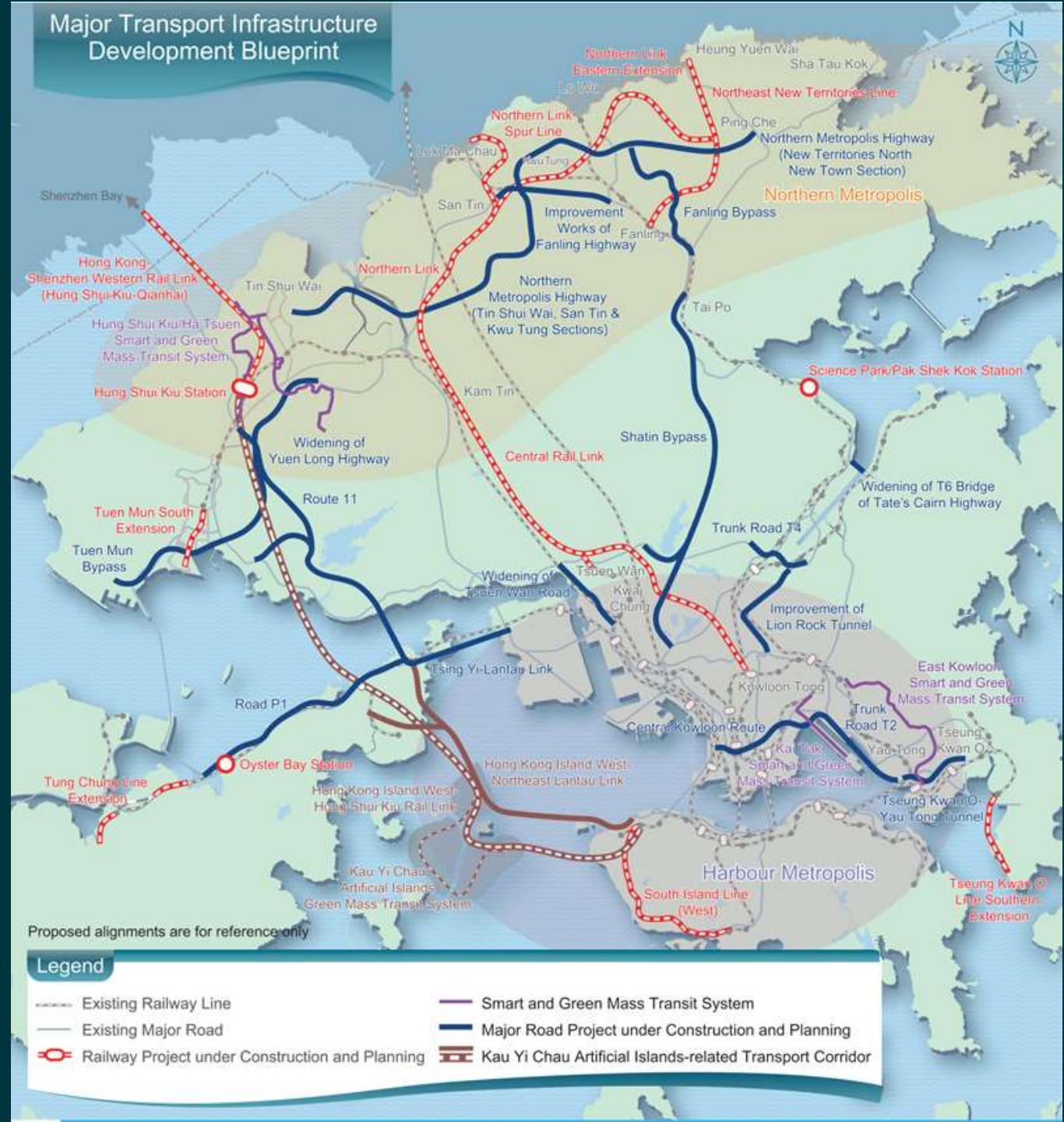


Hong Kong Major Transport Infrastructure Development Blueprint



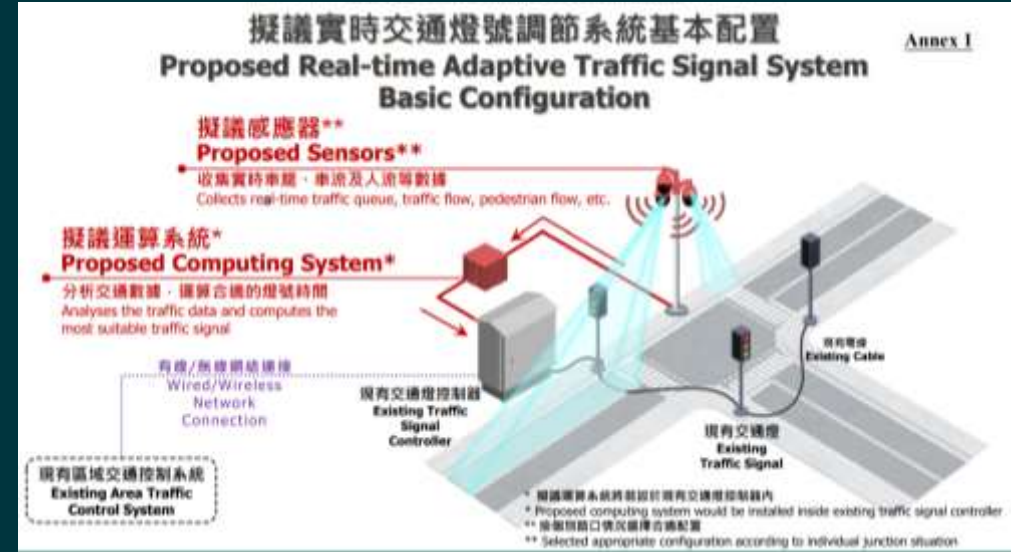
Create capacity to meet transport demand up to 2046

	拉動發展 Drive Development
	加強連繫 Strengthen Connection
	提高效率 Improve Efficiency

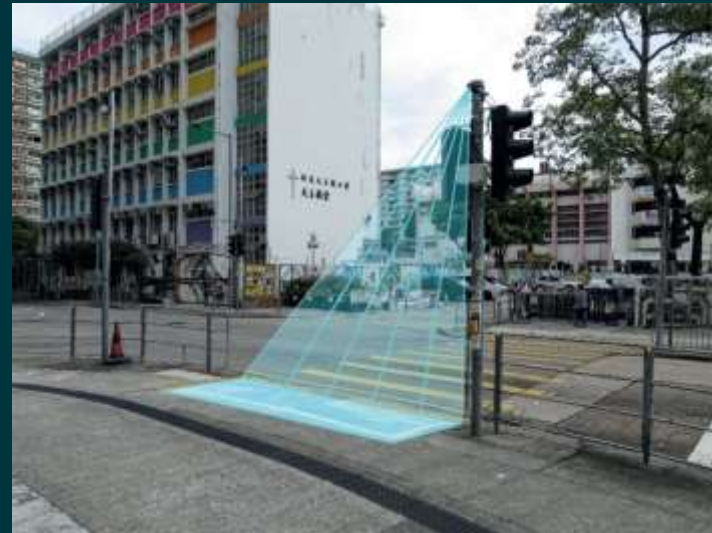


Smart Road Infrastructure

Junctions – Real-time Adaptive Traffic Signal System



Source: Transport Department

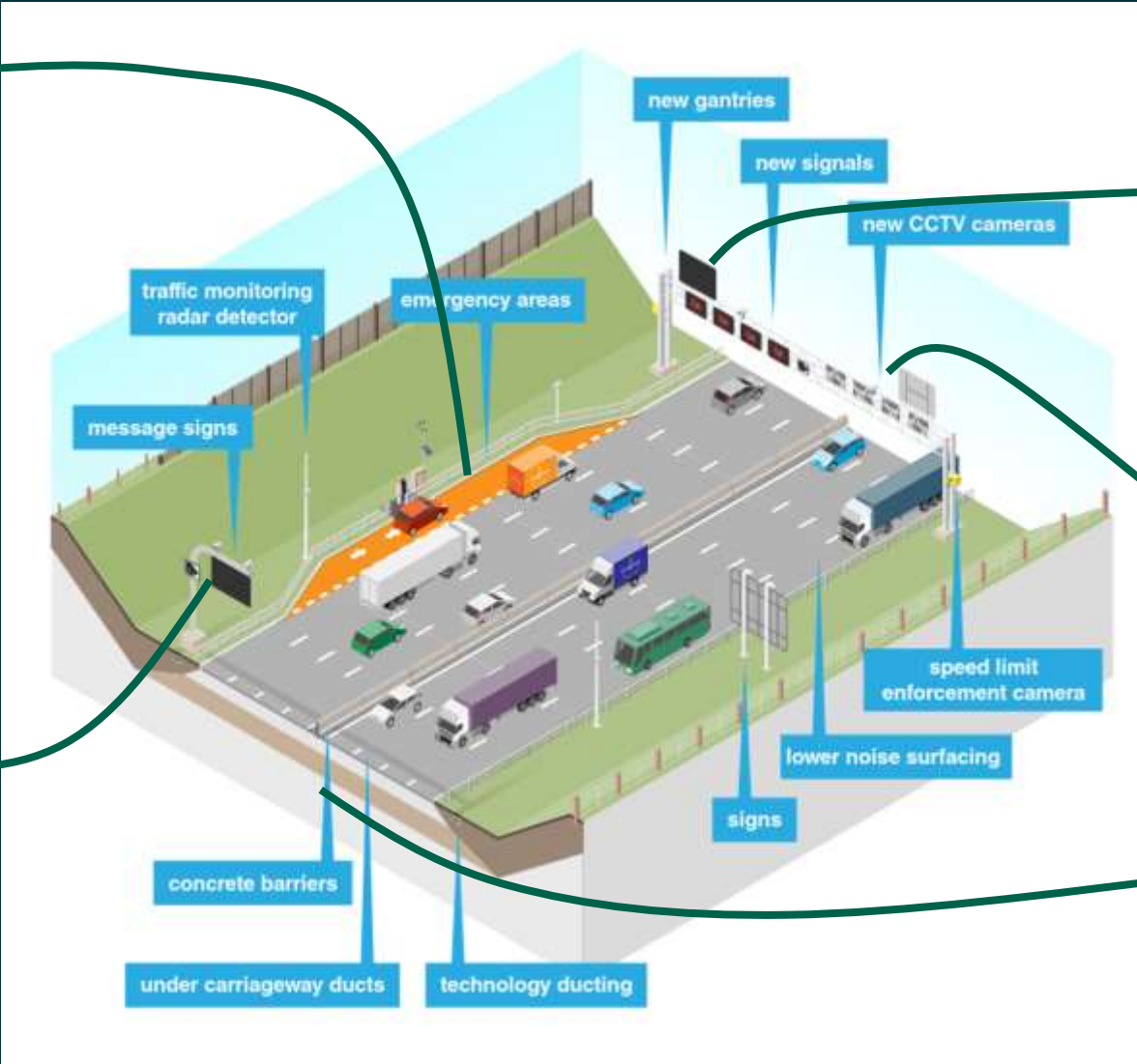


Highways – Smart Motorways

Emergency Area



Message Signs (Dynamic Rerouting/Queue Warning)



Variable Speed Limit & Temporary Use/Closure of Lane/Shoulder



CCTV Cameras



Motorway Incident Detection & Automatic Signaling Sensors

Airport City Link – Autonomous Transportation System

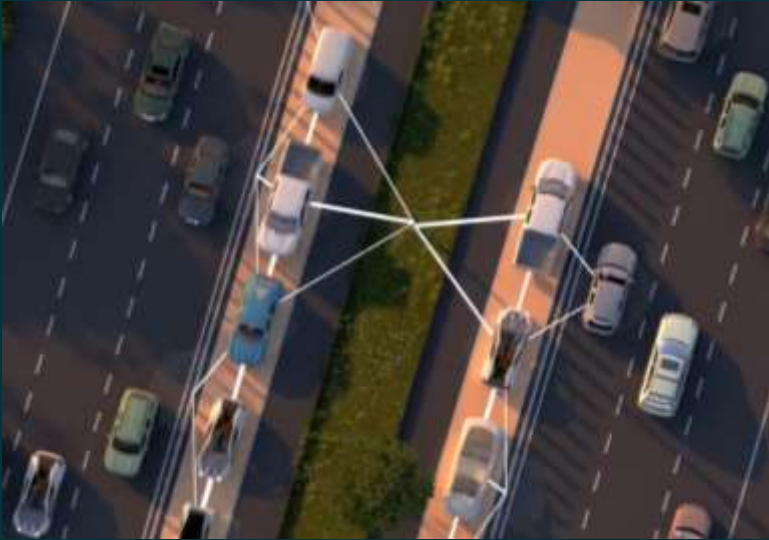


Source: Islands District Council

AV-Readi™ Analysis

PATENT
PENDING

Talking to the road



Electronic communications between vehicles and the roadway

Seeing the road



Infrastructure assets that are readable by vehicle-based sensors

Navigating the road

(Source: Cavnae)



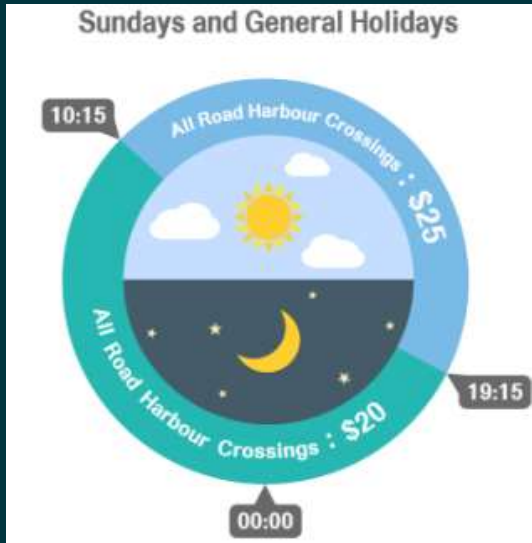
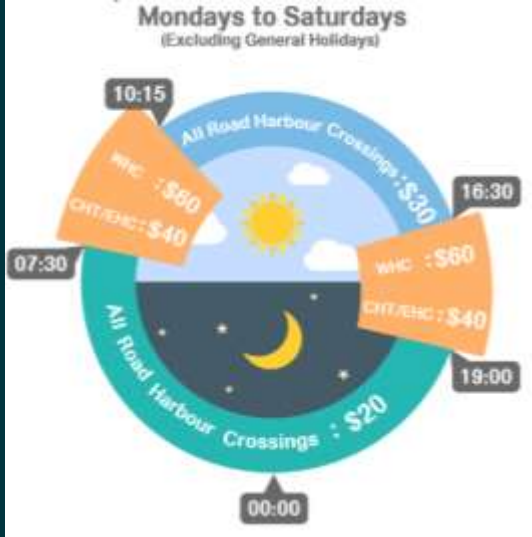
Design and operations for automated vehicles and their uses

AECOM has developed a process and set of tools to ensure that the road network is CV/AV ready and future-proven, total of **over 10,000km worldwide** has been analysed

Smart Transport Services

Rationalisation of Three Road Harbour Crossings

Time-varying Toll

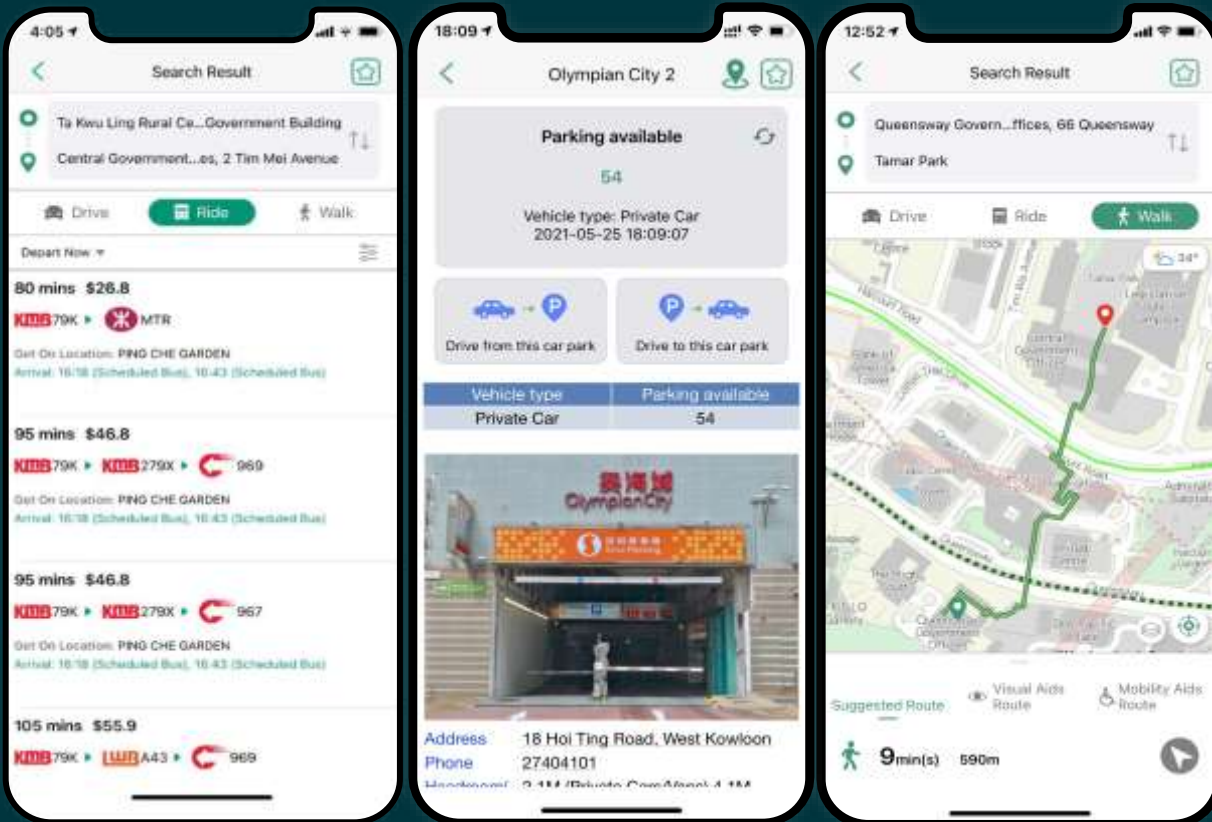


Source: Transport Department

Foundation for On-demand Public Transport Services



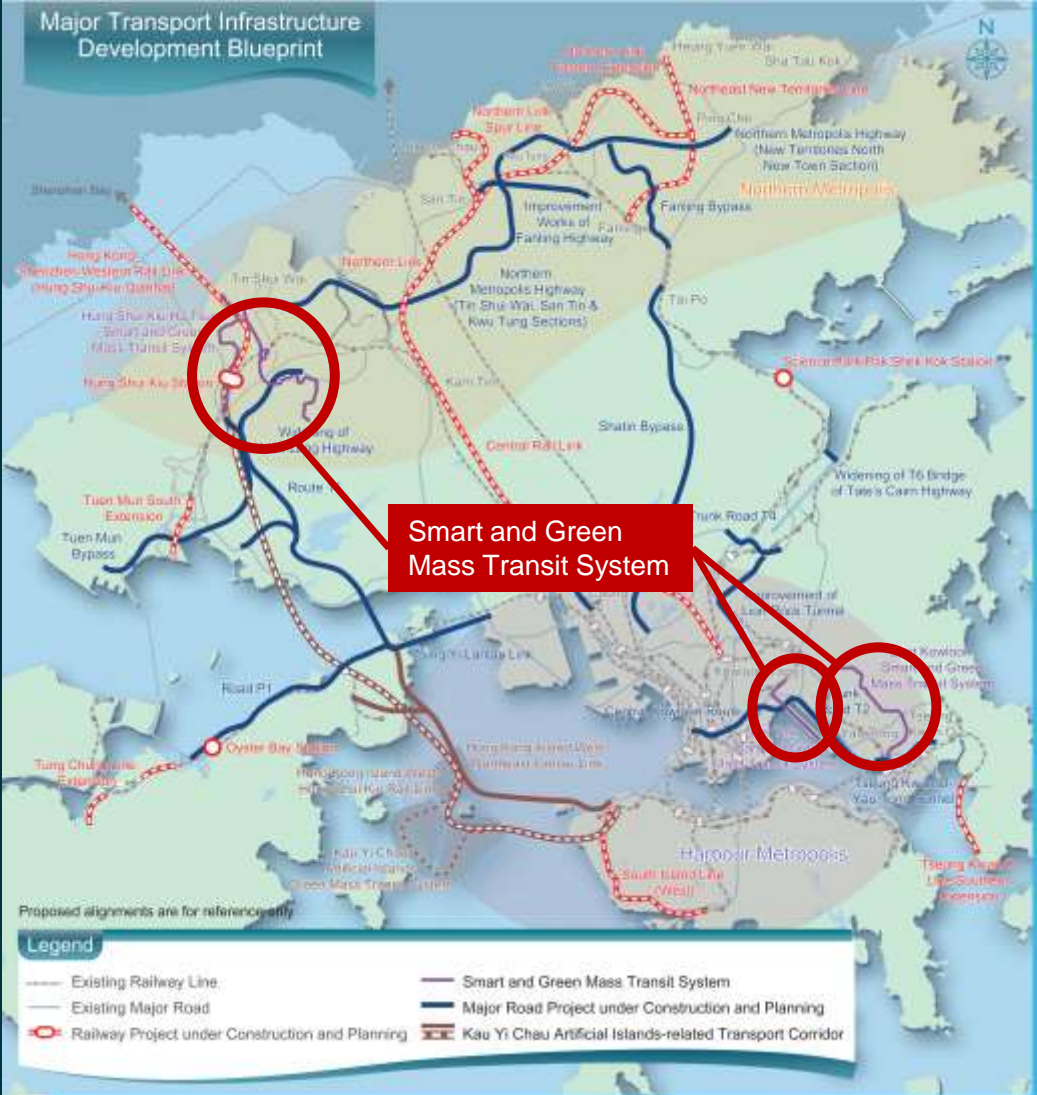
- Real-time Arrival Information System for Green Minibus
- Real-time vacancy of public car parks
- Walking route search



- **Flexibly** respond to passenger demand
- **Effectively** utilise resources



Smart and Green Mass Transit Systems in New Development Areas



Sky Shuttle



Source: BYD

Autonomous Rail Rapid Transit (ART)



Source: CRRC

Bus Rapid Transit (BRT)



Source: TransLink

Clean & Renewable Energy Buses

Hong Kong's First Hydrogen Bus



Growing Number of Electric Buses

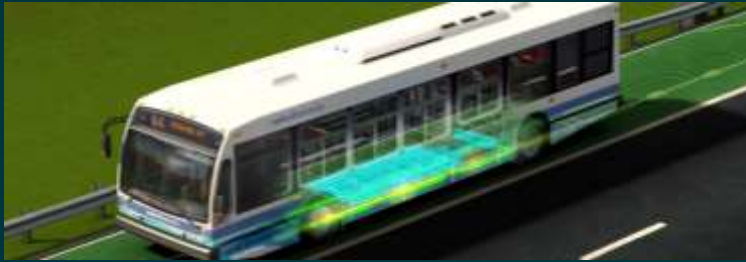


Source: HK01, inmediahk.net

Future Trends

Bringing Future Technologies to Hong Kong

EV Charging Lane



Vehicle-to-Grid (V2G)



Electric Vertical Take-off and Landing (eVTOL)



Electric Vertical Take-off and Landing (eVTOL) Aircraft



Safety and Flight Regulations

To maintain safety and manage potential issues. Once regulations emerge, eVTOL may also help save lives



Vertiport Standards

Provide the infrastructure for eVTOL maintenance, passenger loading and charging



Integrating Operations

Energy, infrastructure, electrified transport, aviation and facilities components should work together



AECOM designed a network of vertiports connecting strategic locations in major Florida cities



(Source: Volocopter)

Inter-city Trial Flight between Shenzhen and Zhuhai



- First cross-sea flight, air taxi trial connecting two GBA cities
- Two fully-autonomous, unmanned flights
- Travel time shortened from 2.5 – 3 hours to 20 mins
- Expected fare: RMB 200 – 300 (approx. 440K – 670K Rupiah)
- Anticipate for passenger-carrying service in 2026

Visit to EVTOL Manufacturers



Thank you!



AECOM Delivering a
better world

Ir Steven Lui
Steven.Lui@aecom.com