



香港智能交通運輸系統協會
Intelligent Transportation Systems, Hong Kong Ltd.

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(by Email: sc_hs01_22@legco.gov.hk)

Legislative Council
Legislative Council Complex
1 Legislative Council Road
Central
Hong Kong

Attn.: Subcommittee on Matters Relating to the Development of Smart City

Dear Sir / Madam

The Promotion of Hong Kong's Development into a Smart City
Response to the Invitation for Submission

We refer to your invitation to interested parties on issues relating to the promotion of Hong Kong's development into a smart city.

The Society for the Intelligent Transportation Systems Hong Kong (ITS-HK) is non-profit making learned group comprising members of the private and public sector focused entirely on advocating the adoption of Intelligent Transportation Systems / Smart Mobility, facilitating relevant cooperative activities and developing local capacity in this area.

Given Hong Kong's long-term excellence in embedding ITS in implementing policies relating to transportation infrastructure and mobility services, we wish to take this opportunity to inform the Subcommittee of the current, short-term and long-term benefits of ITS to Hong Kong on its journey to become a precedence-setting smart city, informed by the broader themes described in the Smart City Blueprint 2.0.

Hong Kong's long-term economic growth and development depends on robust and reliable transport networks to enable the efficient movement of people and goods. Enhancing its local, regional and international connectivity will continue to be critical to Hong Kong's future as we enter a new era of mobility – and we have already witnessed more change in the last decade than we have seen in the last 100 years. The advent of connectivity, autonomy, resource sharing and electromobility is now here.



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With the above context in mind, our feedback below focuses on 6 policy areas: improving the productivity of existing infrastructure with smart motorways; the introduction of road use demand management; ensuring people-centric and efficient Public Transport services; recognition of the value of green transport and active mobility; shared transport; and connected and autonomous vehicle-ready infrastructure.

1. *Smart motorways*

The continued advancement of traffic surveillance and management, where Hong Kong has deep experience, could pave the way for better use of road capacity on the Strategic Road Network (SRN), as evidenced by successful projects overseas.

A Smart Motorway is a stretch of road where traffic surveillance and speed management technology are used to regulate traffic flow in accordance with prevailing congestion levels, by applying video analytics to traffic data and dynamically varying camera-enforced speed limits to improve traffic flows. This provides an immediate boost to road capacity, at least during peak periods. For any new infrastructure, Smart Motorway can deliver greater capacity than conventional traditional assumptions, potentially reducing the number of travel lanes and therefore improved carbon footprint in infrastructure delivery.

We recommend examining the technical assessment of the merits of Smart Motorways and *updating current motorway design assumptions on capacity*. The approach to 'cut and paste' of previous approaches to new roads is increasingly becoming less relevant with the advent of innovations in highway management systems.

2. *Road use demand management*

The choice of travel demand measures ranges from 'soft' to 'hard'. For example, a 'hard' measure would be to close a road, thereby creating new capacity for pedestrians and active mobility, without precluding access for emergency vehicles. Other localised measures include area pricing which charges a fee that may be differentiated by time of day and vehicle type, otherwise known as Congestion Charging (CC) which can rebalance demand amongst modes in the urban environment, favouring public transport and pedestrians. Buses can enjoy more predictable journey times (thereby reducing operating costs) and pedestrians can be given a longer green phase at crossings thereby improving Hong Kong as a liveable city. The charge can also be applied to existing tolled routes on the SRN as a congestion-related variable toll or as a charge applicable to travel corridors where mechanised transport would retain their priority.

The technical considerations relating to where, when and how to implement CC have already been investigated in detail in Hong Kong, most recently by the Toll Rationalisation Study, Congestion Study and ERP Study. With the expiry of the operating concession of the Western



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Harbour Crossing coming up in 2023, it is high time to consider implementing CC to alleviate the traffic issues that have been plaguing Hong Kong for years. A critical question to be answered by CC is to identify the charge level that is considered optimal for reducing road traffic to a satisfactory extent to meet operating objectives. As well as the development of scientific indicators based on speed flow theory, any charge would also need to consider the expected behavioural response of road users to different levels of fees.

We recommend the development of guidelines on determining applicable fees in response to measured prevailing traffic congestion levels, an assessment of complementary measures that may include enhanced public transport, integrated Area Traffic Control Systems, traffic calming and road closures. Most importantly, we recommend promoting price-based demand management *as part of a package of measures*, rather than a narrow focus on charging which has been proven internationally to be counterproductive. A more holistic approach to developing public acceptance for CC has been a critical success factor, as evidenced by schemes in New York, Gothenburg, Stockholm and London.

3. *People-centric and Efficient Public Transport Services*

Hong Kong may claim the highest Public Transport (PT) mode globally, but this hides the challenges faced by the public in securing access to timely, reliable and comfortable PT, particularly during peak periods. The existing designs of Public Transport Interchanges/Bus-to-Bus Interchanges (PTIs/BBIs) are not currently able to deliver a pleasant environment for PT users highlighting the lack of minimum common design requirements.

To combat this issue, as seen in many overseas cities, revenue generated from vehicle ownership taxation, including First Registration Tax, annual Vehicle License Fees and net income from on-street parking charges, could be reinvested in PT service improvements. We also anticipate the greater use of ICT infrastructure to enable the delivery of comfortable centralised waiting environments in next generation PTIs that allocate buses dynamically to gates using airport-style operations. The benefits also include more compact footprint of PTIs, potentially meaning the cost of enhancement could be subsidised by reusing the excess space for other opportunities.

Mobility on Demand (MoD) PT services on a smaller scale could be trialled by first targeting the demand arising from a particular group of users with similar travel characteristics or patterns, such as school students and employees of large employers, *including* Government. A longer-term approach would be to identify ideal locations for Transport Interchange Hubs (TIHs), taking into account rail access for both domestic and cross-boundary trips. The TIHs could also provide support for First Mile Last Mile (FMLM) connection service, active mobility network with micro-mobility sharing facilities and comprehensive park-and-ride facilities with automated parking systems to enhance spatial efficiency. Similar to overseas cities, all the transport modes and services could be further integrated into a single mobility service accessible on demand through



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Mobility as a Service (MaaS) subscriptions, to provide a convenient alternative to the use of private cars as well as promoting a sharing economy and improved connectivity of Hong Kong to neighbouring cities within the GBA. We recommend that this integration includes the sharing of information on PT and other transport modes amongst Hong Kong and neighbouring cities in the GBA to create a one-stop journey planner to provide convenience for everyone travelling within the GBA, ensuring that Hong Kong is seamlessly included.

Rather than coordinating modes individually as has been the practice in Hong Kong, a user-centric view of an end-to-end journey realises opportunities for creating minimum standards for wayfinding, improving the ambience of public waiting areas and enhanced intra-/inter-modal transfers, the implementation of an integrated fare policy and improved access for Persons with Disabilities on *all* modes. The selected use of demand management, for example in the form of CC recommended above, can reduce the *variability* of journey times (favoured by business who value predictability) as well reducing the *duration* of journey times (favoured by everyone), meaning that buses, minibuses and trams that lack exclusive access to transport infrastructure can enjoy some of the benefits of MTR.

In addition, COVID-19 has significantly impacted the delivery of transport services and slowed the growth in usage of existing applications and slowed the level of demand for new applications, particularly those that would be necessary to support the 'new normal' that will be evident as we emerge from the pandemic. Now is the right time plan and execute enhanced eGovernment services for example, the pervasive use of digital identities to more efficiently engage in routine activities such as the application for vehicle licenses (and their renewal) as well as participating in Vehicle Registration Mark auctions. Prioritising users access to these services avoids the time spent queuing at Government facilities whilst improving the efficiency of critical services and minimising the application lead time. Similarly, a larger range of payment options should be offered.

The challenges will also include ensuring social inclusivity, serving the most vulnerable residents that lack the confidence to use public transport, do not own smart phones or struggle with access to the Internet, currently necessary to access online web-based services despite their efficiency. Resources including 'mentors' that can help such people with navigating the complexity of our complex transport networks, as well as public information kiosks that can provide access to all web-based eGovernment services.

4. *Green Transport and Active Mobility*

Green and active transport is *à la mode* when it comes to developing sustainable transport systems. The increasing popularity of Electric Mobility Devices (EMDs) such as e-scooters, electric unicycles, electric bicycles, electric hoverboards and electric skateboards, provide an innovative way to transport people for a short distance, particularly for FMLM journeys.



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Electric motorcycles with swappable batteries can overcome the local hilly road conditions found in Hong Kong. For example, international brands, such as Gogoro, are taking a proactive approach to supporting the development of shared e-mobility ecosystems in Taiwan, China, India, and Indonesia. Legalising the use of EMDs in Hong Kong in selected areas, not only in closed areas such as Government-operated facilities, but also zones subject to demand management and traffic calming schemes. The collective benefit of this would result in Hong Kong being restored to the list of locations of best practice mobility innovations globally. As a minimum, we recommend that Government should keep abreast of the implementation progress of other various mobility initiatives in the mainland, regionally and globally to ensure that the development of the product certification frameworks, innovations in planning for active mobility initiatives, including walkability.

Through a multi-pronged approach for limited new infrastructure and targeted improvements to existing infrastructure, facilitating the increased use of Electric Vehicles (EVs) and EMDs, together with more active promotion of the use of green transport systems, walking and cycling, we could create a culture for healthier lifestyles and more liveable communities. Softer approaches in terms of policies incentives, legislative and regulatory support and social environment improvement initiatives in a wider city-level scale should also be investigated.

On the other hand, the rate of increase of registration of private EVs in HK exceeds that of IC-engined vehicles and the adoption of EVs supports decarbonisation and HK's commitments to mitigate the impacts of climate change. The urgency of enabling further migration of Hong Kong's vehicle fleet to e-mobility, *led by Government and its contractors* cannot be over-emphasised. As a minimum, we recommend Government support and investment to extend the use of public EV Charge Points into existing private estate parking areas. This would ensure convenience for car owners by reducing the time to find available Charge Points in public parking avenues and subsidising parking fees on EVs. We also recommend that a Proof of Concept of in-ground proximity charging is considered, also known as 'charging highways', to raise the awareness of longer-term innovations that relate to road infrastructure.

5. Shared Transport

The ambition for "sharing" in HK government is weak. Globally, this a growing trend and almost every industrialised advanced economy are exploring initiatives and test cases to discourage car ownership whilst promoting car-sharing/car-pooling/car-renting concept. The shortage of parking and chronic increases in traffic congestion have always been major issues in HK and we trust that new initiatives such as car-sharing/car-pooling/car-renting concept in HK can help to relieve some of our problems. The concept of shared public transport is ideally suited to Green Minibuses as well as the unique flexible routing, variable fare regime within which Red Minibuses operate.



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Our recommendations here recognise the mode hierarchy in Hong Kong, but we also point to the gaps created by regulation that have constrained the adoption of shared, on-demand PT in Hong Kong. Within the shared mobility space, ITS-HK looks forward to seeing an evolution in regulation that *enables* - rather than *constrains* - innovations in shared modes and improving the connectivity amongst all modes, including with MTR.

6. *Connected and Autonomous Vehicle-ready Infrastructure.*

Mainland China has doubled its efforts to facilitate the development of Connected and Automated Vehicles (CV/AV). Regulations and policies have been issued to support self-driving car developers to undertake more trials and gain more experience of real-world conditions. In Hong Kong, we have been propagating design concepts for transport infrastructure of all forms with an expected life of at least 30 years without accepting the inevitability of electromobility in the short-term and CV/AV in Hong Kong in the next 15 to 20 years. This approach is no longer sustainable.

There has been no clear breakthrough in transport policy in Hong Kong since Movement Permits for Autonomous Vehicles were issued to eight different models of AVs in 2017, and the Cellular Vehicle-to-Everything (C-V2X) public road tests conducted in March 2021. Hong Kong is clearly lagging behind most Asian economies such as Taiwan, Singapore, Korea and Japan and testing here is still limited to private roads and enclosed areas. We also need a publicly articulated CV/AV roadmap to guide short-, medium- and long-term plans for developments in infrastructure and transport services serving the public and commercial interests.

Shenzhen has been conducting trials of autonomous buses since December 2017, representing almost 5 years' experience on public highways. This leadership shown in Shenzhen has already helped raise public awareness, academic capacity-building and industrial innovation and Hong Kong could benefit equally. Therefore, to realise the same benefits for Hong Kong, we recommend the government should identify test sites and relax/streamline the license requirements and vehicle Type Approval process for testing on public roads to speed up AV deployment and ensure that our regulatory environment is fit-for-purpose. The far-reaching plans for the Northern Metropolis also provide a golden opportunity to mitigate differences in transport policies and infrastructures on both sides of the boundary, thereby supporting greater integration with the GBA thereby maximising the convenience of cross-boundary travel, while ensuring the safety and capacity of our networks.

We recommend that a process should be established with well-defined assessment tools to evaluate the readiness of existing and planned roadway infrastructure from various aspects, reviews of approaches to infrastructure design, promoting public road trials of AVs and inspiring the development of new mobility services in Hong Kong. It is only when we



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strategically prepare our roadway infrastructure and build public confidence in such innovations, can we ensure a safe and efficient operation of CV/AVs in Hong Kong. Anticipating the profound changes in mobility through autonomy in the next 10-20 years, will result in new approaches to infrastructure design and ensuring the best use of public funds now.

Of course, mobility integration with the GBA as introduced above can raise the ambitions further and suggests that any mobility initiative that requires medium or long-term planning should *routinely* consider cross-boundary collaboration. For example, as part of a multi-department collaborative effort we recommend that Hong Kong embraces the benefits of significant investments made globally in electric Vertical Take-Off and Landing (eVTOL) aircraft by investigating the maturity of designs and the requirements to establish cross-boundary eVTOL services. Similarly, the opportunities for cross-boundary hyperloop and autonomous freight and AVs cannot be ignored.

Final words

Given the strategic importance of smart city policies and initiatives to the future of Hong Kong, as an informed consultee, ITS Hong Kong would welcome the opportunity to meet the Subcommittee in support of our comments above. Steering Hong Kong towards the next mobility revolution in Hong Kong as part of its smart, inclusive and livable city ambitions has never been more important.

Yours faithfully

A handwritten signature in blue ink, appearing to be 'Charles So'.

Charles So
President, ITS-HK

A handwritten signature in blue ink, appearing to be 'Andrew Pickford'.

Andrew Pickford
Chairman of the Publicity & Publication Committee