

Autonomous Vehicles to Promote Advanced Data Use across the GBA

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Data lawyers have been staring at the seemingly impenetrable difficulties of squaring the circle of cross border data transfers between Hong Kong SAR* and China (and back again) for many years now. The current approaches to data protection in the two systems of law, in relation to cross-border transfers are different. Section 33 of the Personal Data (Privacy) Ordinance has not been brought into effect, despite enactment nearly 25 years ago. Many of the Fintech and eHealth technologies that depend upon the transmission of personal data across the Greater Bay Area (“**GBA**”) borders face regulatory challenges.

These problems should be markedly less pronounced, however, in the field of autonomous vehicles. Even if (and when) protocols can be agreed for the cross-border use of the same autonomous vehicles, the cross-border aspect of data use will likely be very limited. Given the historical interest and achievement in the field of electric and autonomous vehicles in Hong Kong universities, and the likelihood that the infrastructure needed to support autonomous vehicles will first be found in highly urbanised environments such as Hong Kong, Shenzhen and Guangzhou, there would seem to be every reason for those in Hong Kong to invest in developing these technologies.

In the GBA, investors are attracted to business opportunities to develop autonomous vehicles anticipating considerable return. Market growth is further driven by government policy, such as the Smart Traffic Fund of HK\$1 billion set up by the government of the Hong Kong Special Administrative Region (“**HKSAR Government**”) in 2020 in support of research into and application of autonomous vehicles in Hong Kong.

In this note, we take the temperature of the development of autonomous vehicles, with reference to Hong Kong, China, Singapore and the UK.

Investment



The huge investment opportunity relating to autonomous vehicles is demonstrated by the US\$100 million potential valuation of a Hong Kong start-up in 2019,¹ in which Hong Kong Science and Technology Parks Corporation, Hong Kong University of Science and Technology and Hong Kong Polytechnic University have been involved.

To provide a degree of certainty to the regulatory environment (and hence assurance to investors as to what will be possible in Hong Kong), the Transport Department issued Guidance Notes on the Trials of Autonomous Vehicles in 2017, updated in 2020 (“Hong Kong 2020 Guidance Notes”). In particular, industry players must ensure

that an autonomous vehicle under trial is:

- roadworthy and in serviceable condition;
- covered with appropriate insurance;
- accompanied by a competent driver who could resume immediate manual control during trials; and
- designed with adequate measures to mitigate risks.

*Any reference to “Hong Kong” or “Hong Kong SAR” shall be construed as a reference to “Hong Kong Special Administrative Region of the People’s Republic of China”.

¹ See <https://www.scmp.com/tech/venture-capital/article/2181857/hong-kong-self-driving-start-autox-talks-raise-100-million>

Currently focused on trial conditions, the Hong Kong 2020 Guidance Notes are silent on the assessment standards concerning the approval of autonomous vehicles. To leverage the GBA market, Hong Kong might consider devising a multi-track approval scheme with Guangdong and/or Macau, implying that an autonomous vehicle approved in Hong Kong would be permitted to operate in the GBA, or at least exempted from certain testing requirements.² The cost-saving impact and the reputation of the regulatory system of Hong Kong could attract more investors to the city's fledgling autonomous vehicle industry.

A similar policy has been implemented in the Yangtze River Delta Region since 2019, involving Shanghai, Jiangsu, Zhejiang and Anhui.

What to expect in Hong Kong?

With the idea of a multi-track approval scheme in mind, Hong Kong in establishing assessment standards may refer to the recent legal developments in China, which include (i) the Guideline on National Standardization of Internet of Vehicles (General Requirements) jointly released by the Ministry of Industry and Information Technology ("MIIT") and the Standardization Administration of China in 2018 ("Guideline") and (ii) the consultation paper on the revised Good Practices for the Administration of Road Tests for Intelligent Connected Vehicles (for Trial Implementation) issued by MIIT in early 2021 ("Consultation Paper").

Assessment standards in the Guideline are categorised into five main areas, namely (i) vehicle operation, (ii) data transmission and communication, (iii) software and computerisation, (iv) traffic control and (v) supervision support.

Testing items are streamlined from 14 down to 8 in the Consultation Paper, with an emphasis on the responsiveness to surroundings, the ease to switch between auto and manual modes, the adequacy of risk mitigation measures and the accuracy of location service.

Rather than seeking to go entirely their own way, Hong Kong policymakers may find it helpful to adhere to the China model, highlighting differences through an exception report, where developers need to build in optionality (if their products are to be used in multiple jurisdictions).

Infrastructure



Along with investment in vehicle design, financing the smart infrastructure is equally essential to the success of autonomous vehicles. Broadly speaking, infrastructure in this regard is categorised into:

- the interaction between a vehicle's digital infrastructure, such as real-time monitoring systems and digital maps, which are often tasked with algorithmic calculations aiming to maximise efficiency; and
- physical infrastructure, for example smart traffic lights and smart traffic signs, which are usually equipped with sensors aiding autonomous vehicles to move systematically.

The interaction between vehicles and infrastructure is known as vehicle-to-infrastructure ("V2I") communication. Without testing V2I communications carefully, it is neither safe nor productive to allow autonomous vehicles on the road.

Thus far, few trials of V2I communications of practical significance have been carried out in Hong Kong, as public road tests are generally not available. Under the Road Traffic Ordinance (Cap. 374), if a motor vehicle is to be used on roads, it must be registered and licensed by the Transport Department. As the technical specifications of autonomous vehicles do not fit squarely into that of conventional vehicles, they are unlikely to meet the existing vehicle registration and licensing requirements.³ Currently, in order to carry out trials of autonomous vehicles in Hong Kong, trialling organisations have to apply for a movement permit under the Road Traffic (Registration and Licensing of Vehicles) Regulations (Cap. 374E), which is designed for unlicensed vehicles "not normally used on road" and "driven only for the purpose of proceeding from one site to another". With the movement permit, trialling organisations may utilise the testing infrastructure in Hong Kong Science Park, which has an area of 900 square metres equipped with traffic signs commonly seen in the city.

To facilitate the testing of V2I communications in Hong Kong, the experience of Singapore may be helpful. Singapore has an urban environment similar to Hong Kong, and it has achieved recognition as a leader in infrastructure support for autonomous vehicles.

² See <http://www.sheitic.sh.gov.cn/cygz/20190910/0020-683620.html> (Chinese only)

³ See the Hong Kong 2020 Guidance Notes



With properly designed vehicles and well-built infrastructure, the next step is to shift the inclination of consumers from conventional to autonomous vehicles. In addition to the potential advantages, it is critical for the public to understand what may possibly go wrong. In conventional traffic accidents, the biggest issue (apart from safety) is the attribution of civil liability. However, in the era of autonomous vehicles, the issue of data privacy should also not be overlooked.

Attribution of civil liability – Inherited from the UK, Hong Kong adopts a fault-based negligence framework in determining civil liability for accidents involving conventional vehicles. Key requirements to establish a claim include (i) the existence of a duty of care, (ii) breach of the duty and (iii) consequential damage. With the development of autonomous vehicles, however, questions around the interpretation of programming codes and artificial intelligence algorithms may render the determination of breach of duty difficult and costly.

Recognising the problem, the UK has recently enacted the Automated and Electric Vehicles Act 2018 (“AEVA”), which, in the eyes of some,⁸ is close to a no-fault liability regime. Insurers are held primarily liable for accidents caused by autonomous vehicles, who may then bring a secondary claim against those responsible for the accident, such as the manufacturer or software developer. This helps to ensure that victims are compensated without undue legal wrangling.

Data privacy – Unlike civil liability, personal data is a novel topic to be considered in the investigation of traffic accidents. For instance, users of autonomous vehicles may be hesitant to share location data with investigators, as it has the potential to reveal sensitive personal information by showing a pattern of places visited. Meanwhile, to facilitate investigation, it is crucial for the police to know whether an autonomous vehicle was present at the time and place of the alleged incident. Without a sound legal framework, the risk of unauthorised processing of sensitive data may deter the public from using autonomous vehicles.

- **Digital infrastructure** – Applying a real-time monitoring and evaluation system, Singapore authorities are able to oversee the activities of any autonomous vehicles operating on public roads.⁴
- **Physical infrastructure** – Since 2017, trials have been carried out in a 20,000 square metre test centre built in Jurong Innovation District, with elements of Singapore’s roads replicated (e.g. road infrastructure and high-rise environment) and extreme weather conditions simulated (e.g. raining and flooding).⁵ Further, since 2019, over 1,000 kilometres of public roads in western Singapore have been opened up for trials, paving the way for deployment in inter-town services and longer-haul journeys.⁶

Hong Kong Sandbox

At the moment, the HKSAR Government is planning to introduce a regulatory sandbox for trials of autonomous vehicles.⁷ It is envisaged that the sandbox will provide a confined regulatory environment for qualified developers to test autonomous vehicles in accordance with the Hong Kong 2020 Guidance Notes before they are applied to a greater extent. The sandbox would enable qualified developers, through continuous dialogue with and supervision by the Transport Department, to readily identify and address any risks or concerns relevant to their trials.

With the support of the HKSAR Government, the first road test in Hong Kong is scheduled to be conducted in early 2021 by Hong Kong Applied Science and Technology Research Institute in Shatin. The testing route, covering different elements of Hong Kong’s common roads such as highways, roundabouts and pedestrian crossing facilities, will be 14 kilometres long with sensors to be installed on nearby traffic lights and lamp posts. V2I communications will be a major focus of testing.

⁴ See <https://www.lta.gov.sg/content/ltagov/en/newsroom/2018/11/3/autonomous-vehicles-must-pass-safety-test-before-being-allowed-in-trial-areas.html>

⁵ See <https://media.ntu.edu.sg/NewsReleases/Pages/newsdetail.aspx?news=39308c90-536c-4c3a-be6d-b9c07041a442>

⁶ See https://www.lta.gov.sg/content/ltagov/en/newsroom/2019/10/1/Autonomous_vehicle_testbed_to_be_expanded.html

⁷ See <https://www.legco.gov.hk/research-publications/english/essentials-2021/ise13-policy-on-testing-and-deployment-of-autonomous-vehicles.htm>

⁸ See https://www.sal.org.sg/sites/default/files/SAL-LawReform-Pdf/2020-09/2020_Report%20on%20the%20Attribution%20of%20Civil%20Liability%20for%20Accidents%20Involving%20Autonomous%20Cars.pdf

With reference to legal developments in other common law jurisdictions,⁹ the UK Law Commission and the Scottish Law Commission are of the view that their prevailing data protection laws (i.e. essentially equivalent to the General Data Protection Regulation (“GDPR”)) have built in sufficient safeguards for the processing of sensitive data generated by the use of autonomous vehicles. Location data is likely to be sensitive enough to fall within the “special categories of personal data” under GDPR Article 9,¹⁰ processing of which is only permitted if the data user has both a lawful basis under GDPR Article 6¹¹ and meets one or more of the 10 special conditions listed in GDPR Article 9.¹² Further, as location data generated by autonomous vehicles could possibly constitute “personal data relating to criminal convictions and offences” under GDPR Article 10, the need for special safeguards is recognised. For example:

- external processing of data should be forbidden;
- an encryption-key management system which is unique to each autonomous vehicle, not to each model, should be put in place;
- when stored remotely, data should be encrypted by means of state-of-the-art algorithms;
- encryption keys should be regularly reviewed; and
- data receiving devices should be authenticated.¹³

At present the Personal Data (Privacy) Ordinance (Cap.486) of Hong Kong does not require special treatment of “sensitive” personal data which has been recognised as a long-standing omission. In the context of biometric data and certain types of personal data such as identity card numbers, the Office of the Privacy Commissioner for Personal Data has issued non-binding guidance to promote best practices.

Ready, set ... go

In light of the ready acceptance of electric vehicles by Hong Kong drivers, proximity to the world’s main autonomous vehicle testbed (China), its high urban density, the pressure on car-parking spaces, and the low tolerance of casual on-street parking, Hong Kong is well suited to autonomous vehicle systems (including perhaps shared use and taxi schemes). To grasp these opportunities, Hong Kong will need to move quickly past the current phase of off-street test sites.

In doing so, regulators will need to grapple with:

- establishing a liability regime (which in practice must be imposed by primary legislation);
- insurance regimes;
- bespoke data protection laws; and
- recourse to manufacturers.

The prize might not only be a burgeoning autonomous vehicle industry, but also a very satisfying contribution to success with the GBA venture.

⁹ See <https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2021/01/AV-CP3.pdf>

¹⁰ Location data falls within the special categories when, for example, it reveals a person’s religious belief (through visits to places of worship) or health information (through visits to hospitals or clinics).

¹¹ For example, the data subject has given consent to the processing of his or her personal data for one or more specific purposes.

¹² For example, processing is necessary for the establishment of legal claims by the prosecution.

¹³ See https://edpb.europa.eu/sites/edpb/files/consultation/edpb_guidelines_202001_connectedvehicles.pdf

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