大成 DENTONS

Autonomous Vehicle
Fast Track Newsletter

June 2018

The self-driving revolution kicked into overdrive in 2017, testing the durability of the world's century-old mobility paradigm in ways that seemed impossible only years ago.

In virtually every major country across the globe, experimental autonomous vehicles roam public roads even as most such nations still lack comprehensive legal or ethical frameworks for their safe operation. Millions of autonomously driven miles have been logged already but as the recent death of a pedestrian struck by a self-driving car in the United States pointedly demonstrates, millions more will likely be required before true autonomy arrives.

Dentons' Autonomous Vehicles team, a multidisciplinary, cross-sector team of lawyers and policy professionals from across the world, reports on the latest and most important technical, legal and regulatory developments shaping the path to global autonomy.

Eric Tanenblatt, leader of Global Autonomous Vehicles Team

Insurance (Matt Gaul)

The introduction of more advanced self-driving technology will almost certainly be disruptive to the insurance industry in a number of ways.

First, if the technology lives up to even a fraction of its promise in terms of improved safety and reduced accidents, auto insurance claims will decline dramatically and premiums will likely follow suit. An oft-cited 2016 AON study estimates that general adoption of AV could cause US personal auto insurance premiums to decline by as much as 20 percent, with widespread adoption bringing that number to 40 percent.

Second, there will likely be a shift in the types of traditional auto insurance sold. Many are predicting that the high cost of fully autonomous vehicles, coupled with their ability to stay on the road almost constantly, will lead to a dramatic increase in the use of autonomous taxi/ride-sharing fleets and a corresponding decrease in personal auto ownership. This shift will mean more commercial auto policies and fewer personal lines policy sales.

Third, innovative new insurance products will likely disrupt the traditional auto insurance model. Waymo LLC, the autonomous vehicle division of Alphabet, Inc., Google's parent company, recently announced that it will be working with insuretech startup Trōv, Inc., to provide coverage for lost or damaged personal property as well as any medical expenses resulting from a ride. In Waymo's pilot project in Arizona, the coverage will be bundled with the cost of a ride.

- Waymo teams with Trov on passenger insurance for self-driving service

Finally, not only will AV technology have an impact on the auto insurance market, but the expected decrease in car insurance rates will likely help drive the adoption of such technology. Auto insurance remains one of the

largest costs associated with car ownership/driving and if premiums plummet for AV fleet owners, and they pass their savings onto riders using their vehicles, owning or driving a personal car will, over time, become more and more difficult to justify. Similarly, the savings on commercial auto insurance premiums can be expected to drive AV adoption by trucking and delivery companies and other commercial enterprises with large auto fleets.

US policy/regulatory

In 2017, the US House of Representatives passed HR 3388, the Safely Ensuring Lives Future Development and Research In Vehicle Evolution Act, or the SELF DRIVE Act. The bill, which was approved on a bipartisan voice vote, establishes a national framework for the use of self-driving vehicles, and defines the roles of the federal and state governments for self-driving cars, otherwise known as autonomous vehicles (AVs), including requiring the US Department of Transportation (DOT) to develop sweeping regulations for AVs.

A key provision of the SELF DRIVE Act is a requirement that the DOT establish a Vehicle Advisory Council (the Council) to present best practices and other recommendations to the DOT for developing comprehensive guidelines and regulations with respect to safety, cybersecurity, mobility access for the disabled and elderly, and a framework for technology-information sharing among car manufacturers. The Council will also advise the DOT on environmental impacts; labor issues; consumer privacy concerns; and road testing for operational limitations, along with related verification and validation procedures.

Meanwhile, the US Senate's Commerce, Science and Transportation Committee is making progress on its own AV legislation, which largely mirrors the House bill, but differs from the lower chamber's measure in some key respects. The Senate bill is currently being "hotlined"—a process that allows its sponsors to informally identify any potential concerns and assess whether it could pass the chamber unanimously. The Senate will need to iron out details surrounding cybersecurity, consumer privacy, safety and the exclusion of the trucking industry, all issues that have temporarily stalled its version. If bipartisan solutions to these issues can be found, AV legislation should be able to get to the President's desk this year.

Cybersecurity/privacy

To help improve lane departure warning, blind spot detection, automatic braking, pedestrian detection and crash-avoidance systems, the US Federal Communications Commission in July 2017 approved the allocation of a larger consolidated block of spectrum for use by motor vehicle and aircraft radar systems from 1 GHz to 5GHz. The expansion will also provide an easier route for European auto technology to be brought to the US.

- FCC approves new spectrum for vehicle radar systems
- FCC Unlocks New Airwaves For Vehicular Radar Use
- US FCC Allocates 5 GHz of Contiguous Spectrum for Next Generation Vehicular Radar

In September 2017 the National Highway Traffic Safety Administration (NHTSA) updated its guidelines with the issuance of Best Practices 2.0. The original guidelines, Best Practices 1.0, issued in October 2016, promoted a layered approach to vehicle cybersecurity. The 2.0 version continues in that vein, emphasizing both risk assessment and incident response. The new guidelines recommend a robust product development process that includes a systematic and ongoing safety risk assessment for each self-driving vehicle. The NHTSA also recommends that entities document how they intend to account for their compliance with applicable federal, state and local laws in the design of their vehicles and self-driving vehicles.

- U.S. DOT releases new Automated Driving Systems guidance

On December 13, 2017, Israeli automobile cybersecurity firm Upstream Security Ltd. announced the closing of a $9 million Series A funding. Upstream sells cloud-based cybersecurity solutions for connected and autonomous vehicle fleets, such as the 100 Tesla Semis Pepsi ordered the day before Upstream's announcement. Upstream said in a statement that it plans to open a US headquarters in Silicon Valley and marketing and sales offices in the US and Europe.

- Israeli Autonomous Car Cybersecurity Firm Upstream Security Raises $9 Million
- Upstream Security Raises $9M to Secure Autonomous Vehicles

Cybersecurity experts in the AV industry are sounding the alarm regarding the potential damage from hacking, particularly in platooning truck fleets. Hackers have already succeeded in shutting down non-autonomous cars and remotely triggering features, such as horns, through network systems, entertainment systems, hand-free cell-phone operations, satellite radios and the computer systems of auto dealerships. The connectivity required by AVs could expose drivers to additional risks. Hackers may be able to shut down a car with ransomware, or penetrate onboard systems to extract personally identifiable information. Some speculate that trucks will be high-level targets due to their size and cargo.

- Autonomous Vehicles Pose New Challenges to Future of Cybersecurity
- Cybersecurity experts raise increasing concern over autonomous trucks
- Data Privacy Issues of Self-Driving Vehicles

UK

The Chancellor of the Exchequer's Autumn Budget to Parliament, presented on November 22, 2017, sets out the government's vision for an economy "driven by innovation that will see the UK becoming a world leader in new technologies such as Artificial Intelligence (AI), immersive technology, driverless cars, life sciences and FinTech." Section 4.16, Connected and Autonomous Vehicles (CAVs), states that "[t]he government wants to see fully self-driving cars, without a human operator, on UK roads by 2021. The government will therefore make world-leading changes to the regulatory framework, such as setting out how driverless cars can be tested without a human safety operator. The National Infrastructure Commission (NIC) will also launch a new innovation prize to determine how future roadbuilding should adapt to support self-driving cars."

In addition, an Automated and Electric Vehicles Bill is making good progress as it wends its way through the Parliament. The bill clarifies several insurance issues in relation to CAVs. Its key proposal— a "single insurance policy" to address some of the liability and insurance issues that will be faced—is aimed at ensuring that victims of road accidents are compensated quickly and will not be subject to disputes between insurers. The proposal also would allow insurers to go back to the manufacturer if it is at fault. The bill further provides a solution with regard to compensation of "drivers" of these vehicles, including the potential to recoup losses from those that fail to install "critical software updates." Because the vehicles to which the bill is aimed are not on the market yet, it is expected to be superseded in the not-too-distant future, assuming technological development continues apace.

Australia

Australia is at the forefront of on-road driverless vehicle research. A recent report from Accenture notes the country's central role in the AV technology revolution, including Rio Tinto Group using driverless vehicles to move millions of tons of mining material in the Pilbara region, and University of New South Wales working with the car-sharing service GoGet to develop Australian driverless cars. Australia also has the technical and manufacturing expertise to take advantage of the developing technology and become a leading manufacturer of driverless cars and parts.

An example of Australia's progress in the area includes the creation of the Australia and New Zealand Driverless Vehicle Initiative (ADVI), an industry advisory body whose mission is to promote the introduction of driverless vehicles in the two countries. The group coordinated the region's first on-road driverless car demonstration, held in Adelaide, South Australia, in late 2015.

In June 2016, the South Australian Parliament, for its part, enacted the Motor Vehicles (Trials of Automotive Technologies) Amendment Bill 2016, which provides a framework for driverless vehicle development and testing, including on-road trials (the first such framework in the Southern Hemisphere).

Additionally, the government of South Australia recently established a $10 million fund for future mobility technologies aimed at promoting the state as a conducive environment for testing AV technologies.

Finally, the New South Wales Centre for Road Safety, to shape research and legislation on AV technologies, is testing a Volvo XC90 driverless car.

Germany

A new law was passed in 2017 allowing the German automotive industry to develop, test and—depending on the grade of functionality—market and sell self-driving cars. Under the new law, any form of automated driving will, in principle, be allowed as long as a licensed driver is behind the wheel to assume control of the vehicle should it become necessary. Questions of liability seem to have been settled by a requirement that a black box records the journey to help clarify the circumstances of an accident. The driver assumes the risk of, and bears responsibility for, any accidents that may take place under his or her control. However, if the self-driving system is at fault, the driver may prove that the car maker, as seller of the system, is responsible for the resulting damage. It is envisaged that the new law will be revised as needed, on short notice if need be, so as to keep pace with the technical developments in this nascent and rapidly evolving industry.

In other news, an ethics committee on automated driving has presented guidelines to the government which stress that a self-driving car put into a situation where hitting a human is unavoidable must do the least amount of harm and may not discriminate based on age or any other visible factors. That said, protecting people, rather than property or animals, will be the priority under the pioneering new legal guidelines for the operation of driverless cars, according to the Federal Ministry of Transport and Digital Infrastructure. Typically, the EU stipulates directives and member states follow and implement. In this case, Germany is leading by example. Currently, vehicle type approvals for Level 3 (highly automated) driving systems are a work in progress.

Autonomous driving is clearly in the business plans of all major German automobile manufacturers. The industry has been forced to transform its business toward connectivity, autonomous and electrified driving, and shared services. At the same time, the industry is working hard on technical compliance with emission and safety regulations and standards. The trends in 2018 clearly include autonomous driving, while electrified driving may continue as a niche product for a while. Manufacturers recognize the need to stay competitive with car-sharing concepts and vehicle subscription services, and are doing their best to meet the demands of mobility service provider companies with autonomous vehicles. Uber plans to buy up to 24,000 self-driving cars from Volvo, marking the US firm's transition from app to fleet owner/operator. But autonomous driving at Level 3 is substantially available in cars from all major producers, and Level 5 autonomous vehicles are expected to be available by 2021.

Increasingly, car makers and technology companies are working cooperatively to grow the self-driving sector. Some recent developments:

- Starting in mid-2018, driverless shuttle buses will be tested in the city of Hamburg's harbor district. Germany's Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety is financing the project to the tune of €3.7 million.
- Meanwhile, the retail industry is interested in further expansion of the electric vehicle network—charging is free at some supermarket car parks—but the sector has some major hurdles to overcome, one of the chief ones being a dearth of charging stations. The German Federal Association of Energy and Water Economy believes the country will require at least 70,000 public charging stations by 2020 (the federal government claims that number is too large by half), but only 60 percent of costs may be reimbursed through federal funding and many believe the bureaucratic hassles are greater than the promised economic benefit. Still, the network grew substantially in 2017 and certain discounters plan to support its expansion. Swedish furniture seller IKEA, for one, is committed to equipping all its stores with charging stations by 2019.
- The auto industry needs to adapt both strategically and technologically—building networks of charging spots and swap stations, developing Internet of Things devices and IoT services, managing data volumes. Matthias Wissmann, President of the German Association of the Automotive Industry, has said that "[t]hrough connectivity of vehicles and with infrastructure, traffic can be made safer and more efficient."

- Security standards need to rise in order to combat cyber risks. Cars and IT have been referred to as a "symbiosis of the future." But while the marriage of cloud computing and big data has enabled big data volumes and the economic value and agility that comes with it, data protection has become ever-more critical. As more vehicles are networked online, more automobiles are vulnerable from afar. To protect them, it is necessary not only to safeguard their onboard systems but also the IT and telecommunications structures around the vehicle. Some ways to achieve this are by physically separating a vehicle's onboard networks (by communicating through a gateway) and by encrypting sensitive data. Thus, the system of the future will have a virtual guard that sits directly in the heart of the onboard network, checks all communication for abnormalities, and immediately reports anomalies to a backend, where machine learning algorithms will evaluate the events and provide early detection of threat scenarios.

Canada

In 2017, the government of Canada committed CA$77 million to the modernization of the country's transportation system, a portion of which is earmarked to fund the development of regulations for the safe adoption of connected and autonomous vehicles (CAVs). Similarly, Ontario's provincial budget included funding for the development of a CAV testing zone in Stratford. Goals of the province include bringing together industry and academia to help each other capitalize on the economic opportunities of CAVs and produce a more integrated emerging technology and infrastructure. After French AV company Navya unveiled an autonomous electric shuttle at the UITP Global Public Transport Summit in Montreal, Franco-Quebec transportation company Keolis Canada, in collaboration with Navya and urban investment advisory platform Urbis announced it would begin a one-year pilot project in Quebec. The shuttle service will closely resemble a Navya project currently taking place this in Lyon, France, where shuttles operating without a human driver providing safe and comfortable travel to passengers.

China

The Shenzhen Bus Group launched trial operations for self-driving buses on December 2, 2017. Four smart buses are operating along a 1.2-kilometer route in a closed zone in Shenzhen. The smart buses are capable of avoiding barriers, changing lanes and stopping at three designated sites. Nevertheless, each bus is still equipped with a driver (or "fixed route operator"), whose duty is to manually stop the bus in case of emergency.

China's aggressive entry will increase the competitiveness of the artificial intelligence (AI) sector. On December 14, the Ministry of Industry and Information Technology announced a three-year plan to accelerate the application of AI in everything from autonomous vehicles to drones and robotics. According to the plan, the goal is to build a reliable and safe platform for AVs by 2020.

The Beijing Guidelines

On December 18, 2017, Beijing authorities released China's first guidelines on road-testing AVs. The two documents are entitled "The Proposed Guideline on Acceleration of the Tests of Self-Driving Vehicles in Beijing," and "The Proposed Regulation of Management of Tests of Self-Driving Vehicles in Beijing." (collectively the Beijing Guidelines). On March 22, 2018, Baidu, Inc. (the leading search engine in China) obtained the first-batch of autonomous driving licenses under the Beijing Guideline.

The Beijing Guidelines, which only applies to independent entities registered in China, allows an entity to test no more than five AVs at a time, and requires that it do so on certain designated roads and subject to the following preconditions:

- The vehicles must apply for specialized license plates
- The vehicles must first be tested in closed zones
- Each vehicle must be covered by traffic accident insurance. The insured value should be RMB5 million, or about US$740,000. (By comparison, some US states require a deposit of US$5 million to test-drive an AV).
- During a test, a human driver must be in the car ready to brake or change the vehicle from self-driving to manual mode in emergency. In the event of an accident, the human driver will be deemed liable.

The Shanghai Measures

Further to the Beijing Guidelines, Shanghai authorities on February 22, 2018, issued the Administrative Measures for Road Test of Intelligent Connected Vehicles in Shanghai (For Trial Implementation) (the Shanghai Measures) which regulate the road test matters within that province.

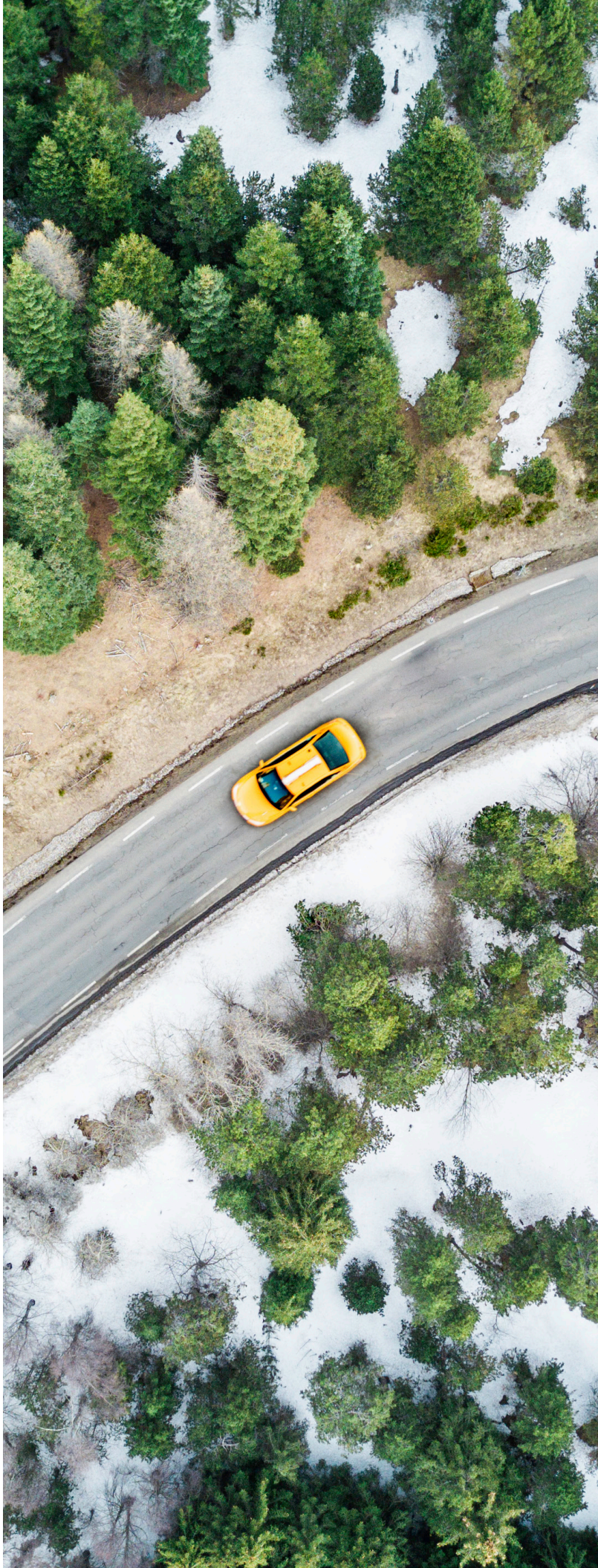
Definition. The phrase "intelligent connected vehicles" (ICVs) refers to a new generation of vehicles that are installed with advanced on-board sensors, controllers, executors, etc.; has integrated modern telecommunication and networks technology to realize V2X (vehicle, road, people, cloud, etc.) information exchange and sharing; is equipped with functions of complex environment perception, intelligent decision-making and coordinated control; and can realize "safe, efficient, comfortable and energy-saving" driving and, eventually, obviate manual operation.

Regulators and jurisdiction. Similar to the Beijing Guidelines, the Shanghai Measures provide for three parties as regulators for ICV road tests in Shanghai.

- Shanghai ICV Road Test Promotion Working Group (Promotion Working Group): The Promotion Working Group is jointly established by the Shanghai Municipal Commission of Economy and Informatization, the Shanghai Administration of Public Security and the Shanghai Municipal Commission of Transport. The Promotion Working Group is responsible for the implementation of the Shanghai Measures, including approving the application of a "test entity," issuing a road test notice and temporary plate number and coordinating the response to any issues arising under the implementation process.
- Shanghai ICV Road Test Review Expert Committee (Expert Committee): Organized by the Promotion Working Group, the Expert Committee is responsible for assessing the application of the test entity and issuing experts' opinions.
- Third-party institution: The Shanghai Manufacturing Innovation Center (Intelligent Connected Vehicle) has been designated by the Promotion Working Group as the authorized "third-party institution" for accepting the application for ICV road test, collecting and analyzing the road test data, connecting related data to the official data platform of the Promotion Working Group, and formulating an analysis report for submission to the Promotion Working Group.

The road test. Self-driving automobiles' road test covers three aspects of the AV experience: the test entity, the test vehicle and the test driver.

- The test entity is clearly limited to the entity registered in China. It shall be an independent legal entity registered in China that conducts relevant research, manufacturing or testing of vehicles or parts and has relevant business capability for ICV. It shall build a data platform to monitor the test vehicle remotely and sign an undertaking letter with the third-party institution for connecting to its data platform.
- The test entity shall be capable of making compensation. It shall purchase traffic accident liability insurance of no less than RMB 5 million (around US$764,526) or provide an equivalent letter of guarantee for road test accidents compensation.
- The test vehicle has not been registered and possesses the driving function as normal automobiles. Among other requirements, it shall have both "manual" and "self-driving" modes and be capable of switching from self-driving to manual at any time.



- The test vehicle shall complete tests in close testing zone. Before road test, it shall complete the tests in the close test zones, by testing no less than 30 times for each testing item and success rate higher than 90 percent.
- The test vehicle may obtain a temporary plate number. After the approval of road test application, the test vehicle may obtain a temporary plate number.
- The test driver. A test driver shall be a holder of PRC driver's license, have more than three years of safe driving experience and no record of drunk driving or drug driving. A test driver shall have more than 50 hours of experience operating a self-driving system (including more than 40 hours for testing items).

The application process. A test entity can apply for a road test, with no more than five test vehicles per application. The following is a breakdown of the application process.

- The test entity submits application materials, and a third-party institution preliminarily reviews the application materials.
- The third-party institution organizes a review of the test vehicle for to confirm that it functions as described.
- The third-party institution installs a monitoring device on the test vehicle and issues a certificate of installation and connection with data platform
- The Promotion Working Group convenes an expert committee to make an assessment and review based on expert's opinions.
- If the test entity passes the review, the Promotion Working Group issues it an ICV road test notice and temporary plate number (for one testing term, not to exceed six months).

Road test area and time. The Promotion Working Group has picked certain typical roads for ICV road tests and will announce the information from time to time. For instance, a 5.6km road has been designated for road tests in the Jiading District of Shanghai.

Data supervision. There are two aspects to data supervision.

- Monitoring device. The test vehicle shall be equipped with a monitoring device that can track the test driver's driving behavior and collect and transmit back in real-time the data of vehicle control mode, vehicle location, vehicle speed and accelerated speed. The test vehicle shall be equipped with a data recording device capable of recording and storing various data of at least 90 seconds before an accident occurs.
- Third-party institution data platform. The test vehicle shall be connected to the third-party institution's data platform.

Penalties. If a test entity provides false materials and data, the Promotion Working Group can cancel the test qualification of the entity immediately, and may refuse to accept test applications from such entity in the future. For other illegal behaviors of a test entity, the third-party institution is entitled to suspend its test qualifications and report it to the Promotion Working Group, which can

cancel test qualifications of all test vehicles applied for by such test entity, publish the test entity's name, and bar it from making new applications within one year of the cancellation.

Allocation of liability. For accidents or violations occurring during a road test, the test driver and/or the test entity could be held responsible. A report of determination for liability is issued by the local transportation administration authority under the public security bureau.

Epilogue. On March 1, 2018, electric vehicle start-up NIO and state-owned auto major SAIC Motor Corporation Ltd. were issued temporary plate numbers for test vehicles, making them the first two carmakers to get approval under the Shanghai Measures. According to media reports, the two Shanghai players had ICVs in the works for a long time, which explains why they were able to quickly fulfil the Shanghai Measures' requirements for getting the approval.

Contributors

Ben Allen
Partner
ben.allen@dentons.com

Adam Brown
Senior Associate
adam.brown@dentons.com

Henry Chen
Senior Partner
henry.chen@dentons.cn

Todd Daubert
Partner
todd.daubert@dentons.com

Matt Gaul
Partner
matthew.gaul@dentons.com

Pascal Jiang
Partner
pascal.jiang@dentons.cn

Michael Ledgett
Partner
michael.ledgett@dentons.com

Michael Malterer
Partner
michael.malterer@dentons.com

Andrew Shaw
Senior Managing Associate
Andrew.Shaw@dentons.com

Eric Tanenblatt
Principal
eric.tanenblatt@dentons.com

Martin Watt
Counsel
martin.watt@dentons.com