

Global Guide to Autonomous Vehicles 2021





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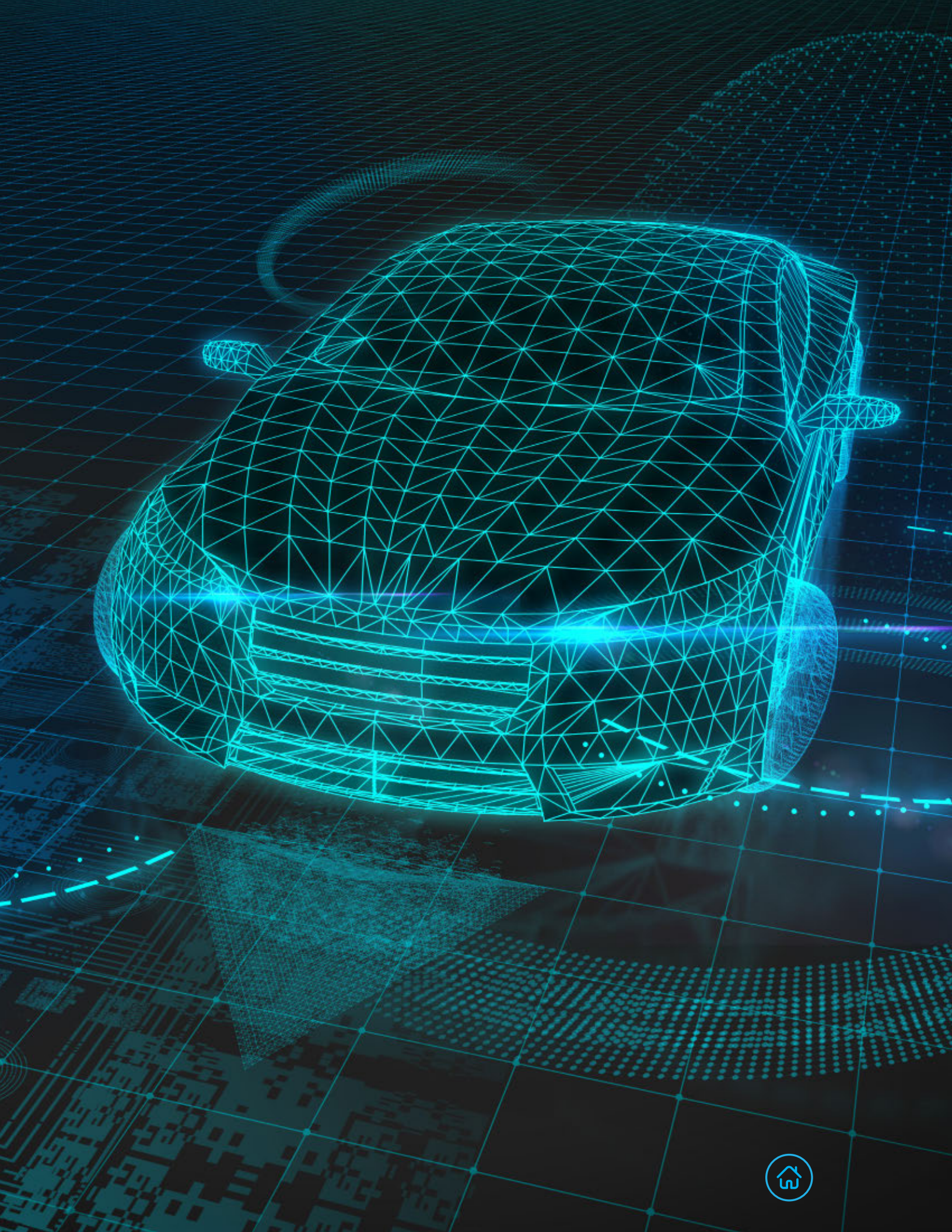
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Executive Summary

The autonomous vehicle industry has faced the impact of the COVID-19 pandemic alongside the entire world economy. Our collective understanding of transportation, and human interaction more generally, has significantly shifted. However, despite the industry-wide headwinds significant technological and regulatory progress has been made. We are closer than ever to the widespread use of autonomous vehicles. With that said, barriers and questions remain.

Drawing on the knowledge and resources of its global, multidisciplinary Autonomous Vehicles practice, and building upon our 2020 Global Guide, Dentons' "**Global Guide to Autonomous Vehicles 2021**" dissects the front-burner policy issues, legislative and regulatory changes, new legal precedents and leading global trends shaping the sector.

In particular, the guide focuses on the following nine countries whose governments or automotive and technology industries have taken unique approaches to supporting the nascent autonomous vehicles industry:

- Australia
- Canada
- China
- Germany
- Hungary
- Poland
- South Korea
- Turkey
- United States

The 2021 Global Guide builds upon previous efforts by adding four new leading countries — Hungary, Poland, South Korea and Turkey. For each country, the report examines five key areas: **regulatory landscape; driverless vehicle testing and deployment; liability; data privacy and security;** and **telecommunications and 5G**. Finally, we cover the impact of the COVID-19 pandemic on the global autonomous transportation industry.



Lay of the land

Australia

The National Transport Commission (NTC) is continuing to work towards creating an end-to-end regulatory system that will allow for the safe, commercial deployment of automated vehicles in Australia. As part of that effort, the NTC is analyzing options and issues in relation to changing driving laws to support automated vehicles. Most recently, the Australian National Transport Commission updated the guidelines for trials of automated vehicles.

Canada

In Canada, autonomous vehicles are subject to regulation at all three levels of government: (i) federal; (ii) provincial and territorial; and (iii) municipal. At present, most of the regulatory activity is concentrated at the federal level; in the provinces of British Columbia, Ontario and Quebec; and in a few municipalities. Overall, the government of Canada remains optimistic about the future of autonomous transport while also operating cautiously to ensure its rollout is safe and widely beneficial. Most recently, the Toronto Transit Commission has teamed up with Metrolinx to pilot an autonomous shuttle program, set to run on public roads, as early as Spring 2021.

China

On February 10, 2020, 11 national ministries including the National Development and Reform Commission, the Ministry of Industry and Information Technology etc., collectively promulgated “the Innovative Development Strategy of Intelligent Vehicle.” The strategy proposes that by 2025, the technology innovation, industrial ecology, infrastructure, regulations and standards, product supervision and network security system of China’s standard intelligent vehicles will be formed. By 2035, China’s standard intelligent vehicle system will be fully completed. To this end, the state will issue policies to promote the development of road traffic automated driving, and

support the R & D and industrialization of common key technologies of intelligent vehicle infrastructure, as well as the construction of major projects of intelligent transportation and smart city infrastructure.

Germany

Overall, the German federal government welcomes further developments in the field of autonomous driving. Its aim is to strengthen the German economic position in this sector. In its “Strategy for Automated and Connected Driving,” which was formulated in 2015, Germany has set the goal of ensuring that Germany remains the “lead supplier for automated and connected vehicles” and becomes the “lead market.” The introduction of autonomous vehicles into public road traffic is to be facilitated in particular, by adapting the legal situation. The effort to amend the legal structure began in earnest in November 2020 when Federal Minister Andreas Scheuer presented a draft bill to create a regulatory scheme for level 4 and level 5 autonomous driving.

Hungary

It is generally understood that Hungary could be an early location for AV as it has developed a telecom network with high quality coverage for most of the country and also has a developed motorway system. Supporting AI and AV and other groundbreaking technologies and automotive production is at the top of the Hungarian Government’s agenda. The Minister of Technology and Innovation introduced the Artificial Intelligence Strategy of Hungary in September 2020. The strategy envisions the creation of the supportive development environment for research and infrastructure required for autonomous driving technologies. The policy focuses on finishing the ZalaZone test track, but also mentions the development of an agricultural test environment for autonomous agricultural works and the development of smart cities.



Poland

In September 2019, the government adopted the “Strategy for Sustainable Development in Transport until 2030” emphasizing the need to strive to have autonomous vehicles on the roads “in the foreseeable future.” The strategy underlines the need to provide support for the effective functioning and competitiveness of the domestic automotive market and the IT market, through setting up the National CAD Contact Point and defining the rules for testing and introducing autonomous vehicles for use in a way that ensures safety and social acceptance for such technology.

South Korea

The Autonomous Vehicles Act, effective from May 1, 2020 provides necessary support/infrastructure for introduction, spread and safe operation of AVs. The act also aims to regulate necessary requirements in relation to AVs. There are two key parts of the act, designation of autonomous driving safety zones and creation of AV Pilot Zones. In December 2020 guidelines were announced covering ethics, cybersecurity and safety.

Turkey

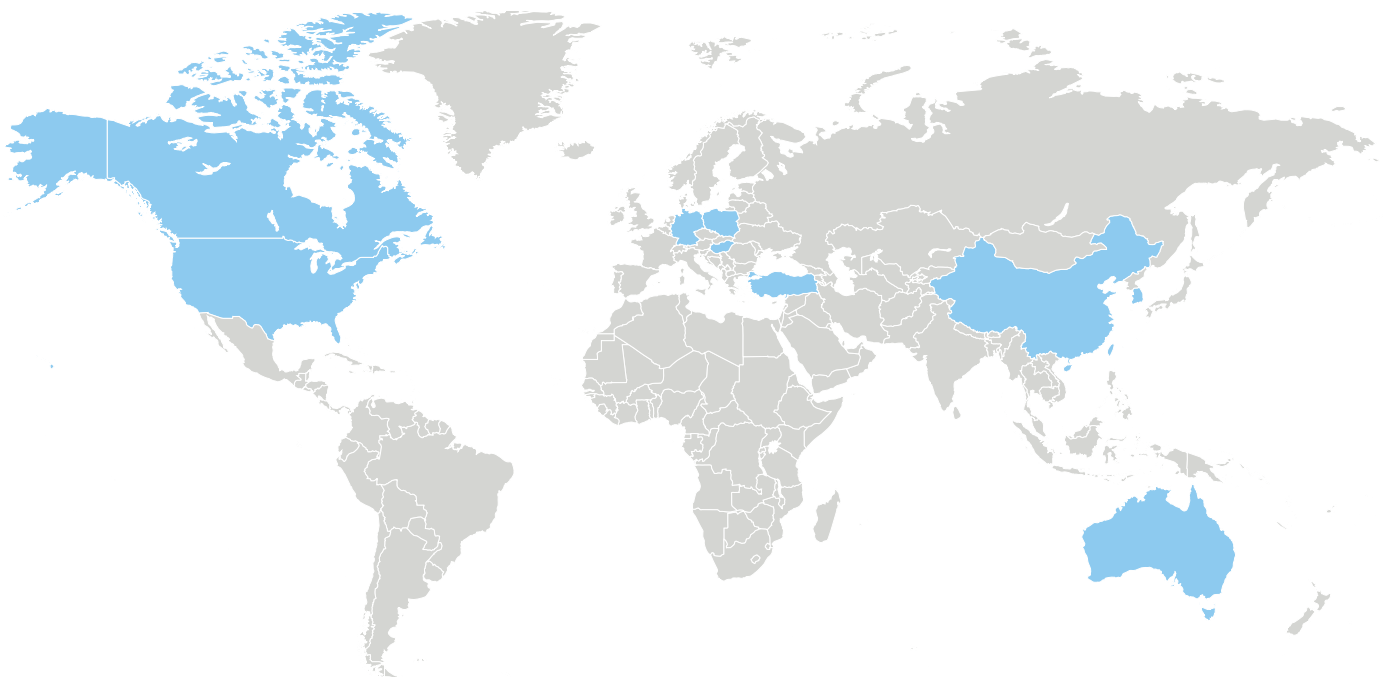
Under Turkish law, there is no specific regulation or a competent body to deploy and expand driverless vehicle testing. However, the Ministry of Transport and

Infrastructure’s Action Plan for 2020-2023 plans to complete the establishment of Autonomous Driving Test and Certification Centers where functional and operational tests of autonomous vehicles are performed and certification services are provided.

Having said that, the Type Approval Regulation permits the testing of autonomous vehicles by the manufacturer companies in accordance with the requirements specified in Annex-2 starting from July 6, 2022.

United States

The United States does not have a federal regulatory framework currently in place to address autonomous vehicle testing and deployment. As a result, testing and deployment is regulated by a patchwork of state-centric laws. That patchwork is made up of 40 states and DC that have either passed autonomous vehicle legislation or are operating under executive orders. On Monday, January 11th the **Department of Transportation released the Automated Vehicles Comprehensive Plan**. In part, the plan looks back over what the Department has done in relation to AVs during Elaine Chao’s time as the Secretary of Transportation. The document also lays out several steps the Department plans to take going forward. Additionally, The Department of Transportation and the National Highway Traffic Safety Administration issued an **advanced notice of proposed rulemaking** requesting





comments on a new generation of safety standards for autonomous vehicles. These new efforts will now fall under the jurisdiction of the Biden Administration and pending Senate confirmation, Pete Buttigieg, Biden's nominee for the Department of Transportation.

We hope that Dentons' Global Guide to Autonomous Vehicles provides you with a closer look at the developing political and legal landscape for autonomous vehicles, and the specific opportunities and challenges across key areas that will define the global mobility revolution.

For more updates to help you stay connected, [click here](#) to subscribe to our autonomous vehicles blog, [The Driverless Commute](#), to get the latest developments sent straight to your inbox.

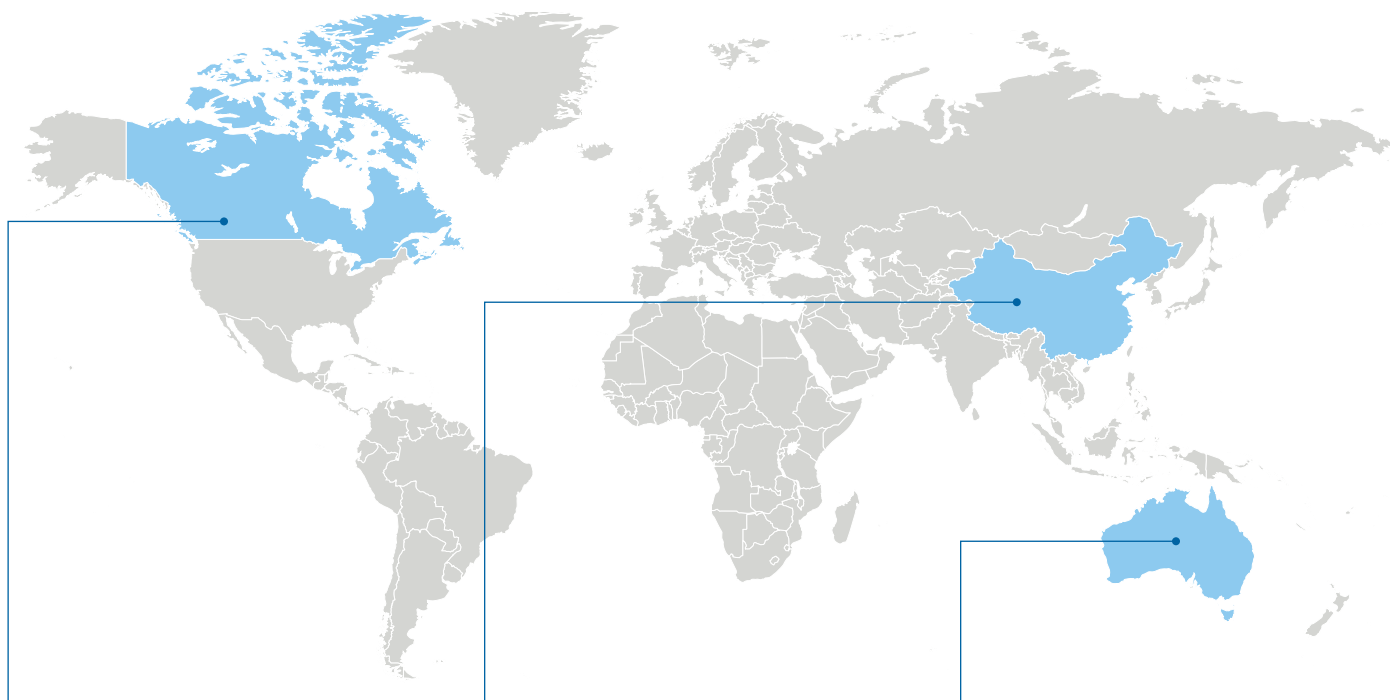
Please also check out our [Global Autonomous Vehicle Index](#). This interactive online tool provides effortless access to key self-driving regulations worldwide and allows users to create custom comparison charts across multiple jurisdictions.

This guide is provided for informational purposes only, and does not constitute advice or guidance. If you have questions regarding any of the covered countries, the guide includes the names and contact details of local lawyers and professionals who are able to assist. If you have questions of a more general nature, about the guide or the sector overall, please feel free to contact our Autonomous Vehicles practice leader via email at eric.tanenblatt@dentons.com.



Key findings and updates

Governments around the globe, both large and small, must answer the complex technical, legal and regulatory questions plaguing full autonomy. Some of the key 2020 findings across the globe include:

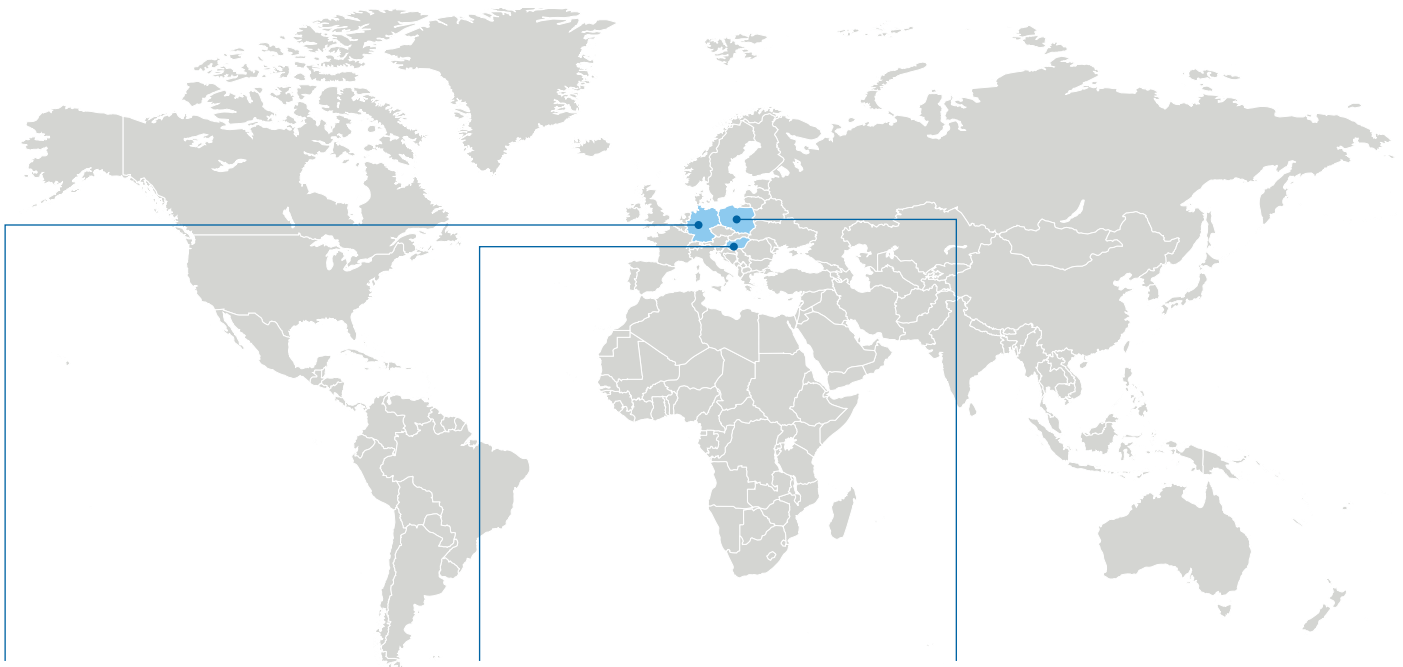


Canada: The federal government has focused on ensuring consistency across all jurisdictions while provincial, territorial and municipal governments are taking steps to promote AV development. In Ontario, companies must obtain consent pursuant to Ontario's AV Pilot Project regulations in order to put an AV (SAE level 4-5) on the road. In Quebec, companies must obtain consent pursuant to *An Act to amend the Highway Safety Code and other provisions* to put an AV (SAE level 3-5) on the road, and in other jurisdictions, companies must obtain the Registrar's consent.

China: On March 9, 2020, the Ministry of Industry and Information Technology released the recommended draft of national standards for automobile driving automation classification on the official website.

Australia: The Australian National Transport Commission updated the guidelines for trials of automated vehicles in November 2020.





Germany: In November 2020 Federal Minister Andreas Scheuer presented a draft bill for the law on autonomous driving which will create a legal framework for Level 4 and Level 5 vehicles. The government aims to pass the bill by the end of Summer 2021.

Hungary: Hungary's Minister of Technology and Innovation introduced the Artificial Intelligence Strategy of Hungary in September 2020 for the next 10 years. The strategy envisions the creation of the supportive development environment for research and infrastructure required for autonomous driving technologies. The policy focuses on finishing the ZalaZone test track, but also mentions the development of an agricultural test environment for autonomous agricultural works and the development of smart cities. The policy also covers the analysis and support of development of vehicle-to-vehicle communications environment. The Government committed to create a number of roads implemented with the necessary autonomous technologies by 2025.¹

Poland: In February 2020, the Autonomous Vehicles Working Group was established in Gdańsk, Poland. The inaugural meeting was attended by representatives of the Governor of the region, businesses interested in autonomous vehicles, clusters and scientists. The task force is seeking to create the conditions for development and sale of services and products related to autonomous vehicles.

¹ The artificial intelligence strategy of Hungary <https://digitalisjoletprogram.hu/files/6f/3b/6f3b96c7604fd36e436a96a3a01e0b05.pdf> (available only in Hungarian)





United States: The most recent action by the **Department of Transportation is the release of the Automated Vehicles Comprehensive Plan**. In part, the plan looks back over what the Department has done in relation to AVs during Elaine Chao's time as the Secretary of Transportation. However, it also lays out several steps the Department plans to take going forward. Of course, the plan laid out in this document is subject to changes brought forth by the Biden administration, specifically Pete Buttigieg who has been nominated to lead the Department of Transportation. The plan provides three broad principles for the Department going forward in regard to autonomous vehicles: protect users and communities, promote efficient markets and facilitate coordinated efforts. Additionally, The Department of Transportation and the National Highway Traffic Safety Administration issued an advanced notice of proposed rulemaking in November

requesting comments on a new generation of safety standards for autonomous vehicles. This new advanced notice comes after several research reports, guidance documents, advance notices of proposed rulemakings, and notices of proposed rulemakings relating to the development of vehicles equipped with Automated Driving Systems (ADS). According to the NHTSA, "The framework would objectively define, assess, and manage the safety of ADS performance while ensuring the needed flexibility to enable further innovation."

Turkey: Most recently, the Turkish Ministry of Industry and Technology adopted the Regulation on Type Approval Requirements. The newly introduced Type Approval Regulation sets forth certain type approval requirement for autonomous vehicles. The Regulation will effectively enter into force by 06.07.2022. The Type Approval Regulation mainly aims to

harmonize the Turkish legislation with the EU rules. Additionally, the Ministry of Transport and Infrastructure's Action Plan for 2020-2023 calls for the completion of Autonomous Driving Test and Certification Centers where functional and operational tests of autonomous vehicles are performed and certification services are provided.

South Korea: South Korea's Autonomous Vehicle Act became effective on May 1, 2020. The Act provides the necessary support and infrastructure for introduction, spread and safe operation of AVs. The Act also regulates the necessary requirements in relation to AVs. Ultimately, the Act aims to contribute to the improvement of the public's living conditions and development of the national economy by promoting and supporting the commercialization of AVs.



Australia



Regulatory overview

In Australia, each state and territory has enacted its own road safety laws. That is, road safety is not regulated by a harmonized federal (i.e., Australia-wide) law. Moreover, each region has separate regulatory agencies/authorities as seen below.

Region	Agency
Australian Capital Territory (ACT)	Transport Canberra and City Services
New South Wales (NSW)	Smart Innovation Centre Transport for NSW
Northern Territory (NT)	Department of Infrastructure, Planning and Logistics
	Registrar of Motor Vehicles
Queensland	Department of Transport and Main Roads
South Australia (SA)	Department for Infrastructure and Transport
Tasmania	Department of State Growth
Victoria (VIC)	VicRoads
Western Australia (WA)	Department of Transport

In order to address the inconsistencies between the various states and territories, the National Transport Commission (NTC)² introduced the Australian Road Rules (ARRs) to unify the nation's road safety laws. The ARR are model laws which have been implemented in each state and territory.

² The NTC is an independent advisory body responsible for the productivity, safety and environmental performance of Australia's road, rail and intermodal transport systems.



The NTC has implemented a regulatory roadmap in phases to ensure different levels of automation may be commercially deployed. Relevantly:

MAY 2017

The guidelines for trials of automated vehicles in Australia and accompanying policy paper were released following approval by transport ministers.

MAY 2018

The Safety Assurance for Automated Driving Systems Consultation Regulation Impact Statement was released.

MARCH 2019

The House of Representatives Standing Committee on Infrastructure, Transport and Cities released its final committee report 'Innovating Transport across Australia'.



NOVEMBER 2016

Australian transport ministers agreed to a phased reform program so that conditionally automated (i.e., SAE Level 3) vehicles could operate safely and legally on Australian roads before 2020, and highly and fully automated vehicles from 2020.



OCTOBER 2017

The NTC consulted on the discussion paper "Changing driving laws to support automated vehicles," which seeks to clarify how current driver and driving laws apply to automated vehicles and who would be legally responsible for their operation.

NOVEMBER 2017

National Enforcement Guidelines for Automated Vehicles (Guidelines) and accompanying policy paper were released following approval by transport ministers.

NOVEMBER 2018

The Safety Assurance for Automated Driving Systems: Decision Regulation Impact Statement was released following approval by transport and infrastructure ministers.

OCTOBER 2019

The NTC released its Automated Vehicle Program, which incorporates the work completed to date, further planned reform and interaction with other agencies.

NOVEMBER 2019

The NTC released its National Transport Reform Implementation Monitoring Report.

NOVEMBER 2020

The guidelines for trials of automated vehicles were updated by the NTC.

At present the NTC is working towards creating an end to end regulatory system that will allow for the safe, commercial deployment of automated vehicles in Australia. As part of that effort, the NTC is currently analyzing options and issues in relation to changing driving laws to support automated vehicles.



While a handful of political leaders have taken an interest in autonomous transit, Hon Michael McCormack MP (Deputy Prime Minister)³ and Paul Fletcher (Minister for Communications, Cyber Safety and the Arts)⁴ have been particularly outspoken about preparing Australia for the autonomous revolution.



Hon Michael McCormack

Party leader of the National Party of Australia

“Getting Australians home sooner and safer is a core focus of our government, and the emergence of automated vehicles represents a significant opportunity to realize safety and productivity benefits while supporting Australian industry and innovation.”



Paul Fletcher

Minister for Communications, Cyber Safety and the Arts

“This is an important time for industry and government collaboration, as we need to ensure a clear path for network deployment and allocation of spectrum is developed to enable an effective 5G future that will benefit Australian business and society while keeping Australia at the forefront of next generation mobile telecommunications.”

Additionally, Australia’s transport ministers, through the COAG Transport and Infrastructure Council, have agreed on the strategic priority of preparing for the deployment of automated vehicles and other innovative transport technologies. The Council has agreed to a program of national work, which is being implemented collaboratively by the Australian state, and territory governments, as well as intergovernmental organizations such as Austroads and the National Transport Commission.⁵

4 <https://www.afr.com/business/telecommunications/new-comms-minister-eyes-5g-industry-opportunities-20190527-p51rgu>

5 <https://www.infrastructure.gov.au/transport/automatedvehicles/preparing-for-automated-vehicles.aspx>



That being said, significant investment needs to be made to upgrade infrastructure, including communications and access to data.

Municipalities have taken a leading role in that effort.

For example: NSW has implemented a “Connected and Automated Vehicles Plan”⁶; and VIC has released advice indicating that while Victoria is well placed for the roll out of new vehicles, significant investment will be required to fully maximize their potential.⁷ This includes:

- Up to \$1.7 billion to upgrade mobile networks
- Around \$250 million for improved line markings on roads
- At least \$2.2 billion for energy network upgrades.

Driverless vehicle testing and deployment

Trialing of driverless vehicles is permitted in Australia upon grant of a relevant permit from each relevant state/territory. Generally, “trial permits” are granted on a case-by-case basis.

Certain states (such as Victoria) require the application for a trial permit to prepare a safety management plan that complies with NTC guidelines. Regardless of jurisdiction, appropriate safety hardware/software must be established in a safety management plan that complies with NTC guidelines. Whether or not vehicles must have the capability to be remotely operated is dependent on the safety management plan. Typically, Australian road rules require a person to be seated in the driver’s seat. Certain states, such as NSW and SA require the trialing organization to have third-party policy and/or public liability insurance.

A human driver will be required in the vehicle unless a specific exemption or permit has been granted. As such, it is possible that vehicles trialed in Australia will not have human drivers. In this case trialing organizations simply need to demonstrate how they have addressed the relevant safety risks of not having the backup of a

human driver. Where there is a human driver, associated human factor risks will also need to be considered, including such behavioral requirements as alertness and ability to resume the entire driving task if requested or if there is an evident vehicle system failure.

To that end, while not driving, the human driver must not engage in activities that prevent him or her from responding to takeover demands. Activities not in line with the intended use of the automated driving function or prohibited by law include:

- Reading or viewing a device or thing unrelated to navigation or driving (ARR, Rule 299)
- Using a laptop (ARR, Rule 299)
- Using a mobile phone, except in permitted circumstances (ARR, Rule 300)

Throughout vehicle testing, record keeping requirements apply. Generally speaking, trialing organizations should comply with all relevant crash reporting requirements, and report on incidents involving the automated driving system to authorities.

Liability

In the event of a crash involving an autonomous vehicle:

- The Australian Consumer Law (ACL) provides a regulatory system of obligations and warranties in order for manufacturers to meet quality and safety standards; and
- Each state and territory has its own Civil Liability Act for personal injuries caused by motor vehicle accidents.

While the usual negligence principles apply, there will be additional issues regarding liability for compensation. For example, there will be issues as to who will bear responsibility for harm with respect to higher levels of automation. Under the ACL, manufacturers and suppliers (such as sellers and resellers) may be held liable.

⁶ <https://future.transport.nsw.gov.au/plans/connected-and-automated-vehicles-plan>

⁷ <http://www.infrastructurevictoria.com.au/project/automated-and-zero-emission-vehicle-infrastructure/>



In October 2017, the NTC released a discussion paper titled “Changing driving laws to support automated vehicles” (Discussion Paper).⁸ The Discussion Paper provides in-depth analysis of the need to legally recognize an ADS in Australia. It explains that an Automated Driving System (ADS) is a system – not a person – so it cannot be held responsible for its actions. An entity needs to be responsible for the actions of an ADS to ensure they can operate safely.

In its Automated Vehicle Program⁹ released in October 2019, the NTC confirmed it will consider data from insurers to assess and manage liability for road traffic law breaches and crashes.

Data privacy and security

The *Privacy Act 1988* (Privacy Act) (and its accompanying Australian Privacy Principles (APPs)) regulates the management, storage, access and correction of personal information about individuals. This includes the collection of information from use of autonomous vehicles.

An autonomous vehicle will also likely collect information about its users for the purpose of access (for example, facial recognition information) as well as location information (where a person goes, how long a person was at a location for, the next destinations) and preferences (for example, air conditioning temperature, music etc.). Some of this information about users will likely be classified as personal information and as such, any collection and use will be subject to the *Privacy Act 1988* requirements.

Data is only allowed to be stored and transmitted if:

- Collection of personal information is relevant to the functions and activities of the vehicle;
- A person is aware of personal information collection and how that information is used through an up-to-date privacy policy and collection notices provided at the time information is collected;

- Use and disclosure of personal information is consistent with the purpose for which it is collected, has the individual’s consent, and is for limited other purposes; and
- Personal information is secure.

Consumers have the right to alter and correct their own personal information. An APP entity must take reasonable steps to destroy personal information or ensure it is de-identified if it no longer needs the information for any purpose for which it may be used or disclosed under the APPs. However, in Australia, we do not have the equivalent “right to be forgotten” under the GDPR.

Cybersecurity is regulated by the Privacy and its APPs. For example, the APPs prescribe that:

- Organizations must take reasonable steps to protect personal information that they hold from misuse, interference, loss and unauthorized access, modification or disclosure;
- Organizations must also take reasonable steps to destroy or de-identify personal information they hold if it is no longer needed to any purpose for which it may be used or disclosed, it is not contained in a Commonwealth record, and the entity is not required by or under an Australian law or a court or tribunal order to retain it.

More recently, the Australian federal government introduced the Notifiable Data Breaches Scheme to manage cybersecurity accountability.

Telecommunications and 5G

Following industry consultation, the Australian Communications and Media Authority introduced the Radio Communications (Intelligent Transport Systems) Class License 2017, which will support the use of complying wireless technologies and devices. The regulations allow the 5.9 GHz band to be used for ITS in Australia, and are consistent with the ITS arrangements

⁸ [https://www.ntc.gov.au/Media/Reports/\(E5695ACE-993C-618F-46E1-A87639188CD9\).pdf](https://www.ntc.gov.au/Media/Reports/(E5695ACE-993C-618F-46E1-A87639188CD9).pdf)

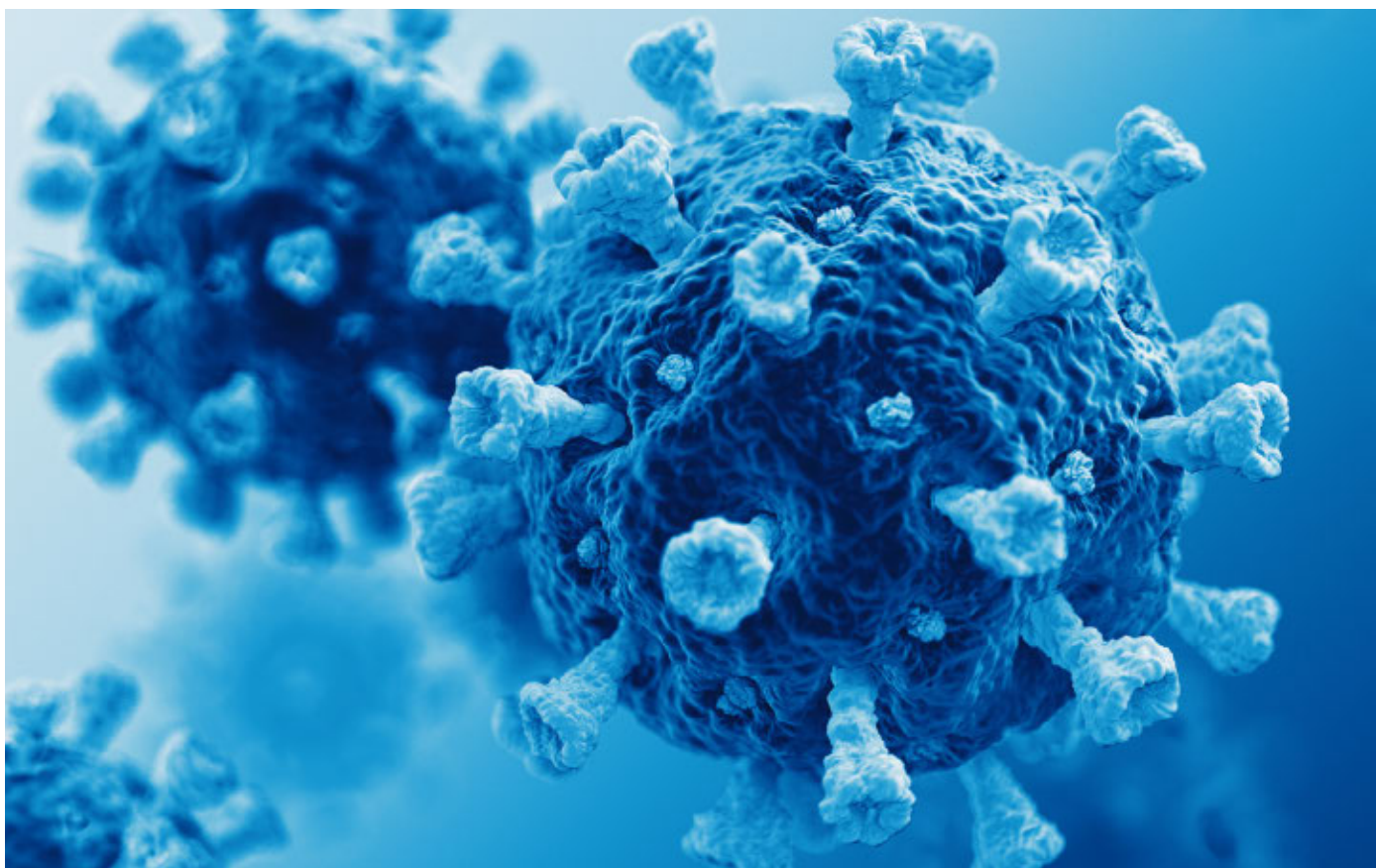
⁹ <https://www.ntc.gov.au/transport-reform/automated-vehicle-program>



in major vehicle markets such as the US and EU.¹⁰ In the Australian context, short-range 5.9 GHz radios accommodate 4G C- V2X technology.

COVID-19 impact

COVID-19 resulted in a reduction in traffic due to an increase in the number of people working from home. In Victoria, where COVID-19 had the greatest impact, significant reductions in Melbourne’s motorway congestion during peak hours, and reductions in overall actual vehicle numbers resulted in greater travel efficiency.¹¹ Flexible working could result in greater travel efficiency post COVID-19 when compared to pre COVID-19.



¹⁰ <https://www.acma.gov.au/Industry/Spectrum/Spectrum-planning/About-spectrum-planning/acma-introduces-new-regulations-to-support-intelligent-transport-systems>

¹¹ <https://www.arrb.com.au/latest-research/data-sheds-new-light-on-covid-19-effects>



Canada



Regulatory overview

In Canada, autonomous vehicles are subject to regulation at all three levels of government: (i) federal; (ii) provincial and territorial; and (iii) municipal. At present, most of the regulatory activity is concentrated at the federal level, in the provinces of British Columbia, Ontario and Quebec, and in a few major municipalities. Overall, the government of Canada remains optimistic about the future of autonomous transport while also operating cautiously to ensure that its rollout is safe and beneficial to the public.

The federal government is responsible for regulating manufacturing and infrastructure as it relates to vehicles. The provinces and territories are responsible for the licensing of drivers, vehicle registration and insurance, and laws and regulations regarding the safe operation of vehicles on public roads. The regulatory agencies in the major jurisdictions are as follows:

Region	Agency
Federal	<i>Transport Canada</i> : Sets and enforces compliance with safety standards for manufactured and imported vehicles.
	<i>Innovation, Science and Economic Development Canada (ISED)</i> : Sets and enforces compliance with technical standards relating to wireless technology integrated in vehicles and roadside infrastructure.
British Columbia	<i>Ministry of Transportation and Infrastructure</i> : Plans transportation networks, provides transport infrastructure, develops transportation policies and enforces related acts and regulations.
Ontario	<i>Ministry of Transportation (MTO)</i> : Licensing of drivers, vehicle registration and insurance, and regulating the safe operation of vehicles on public roads.
Quebec	<i>Societe de l'assurance du Quebec (SAAQ)</i> : Enforces the <i>Highway Safety Code</i> , which covers the use of vehicles, pedestrian traffic and road safety in the province.

The federal government has not introduced an overarching policy for autonomous vehicles (AVs). However, the Canadian Senate has provided guidance to federal agencies to take a policy leadership role and to guide provinces in facilitating trials.

Specifically, the Standing Senate Committee on Transport and Communications has provided guidance through 16 recommendations to Transport Canada and ISED to build a coordinated national strategy on automated and connected vehicles. Those recommendations include, among other things, that the ISED allocate spectrum for connected vehicle uses, and in cooperation with Transport Canada, create a policy unit to coordinate federal efforts on automated and connected vehicles. It has also recommended that Transport Canada engage with provincial governments through the Canadian Council of Motor Transport Administrators (CCMTA) to develop a model provincial policy for the use of automated and connected vehicles.¹²

¹² Senate of Canada, Report of the Standing Senate Committee on National Finance, "Driving Change: Technology and the future of the automated vehicle" (January 2018), online (pdf): <https://sencanada.ca/content/sen/committee/421/TRCM/Reports/COM_RPT_TRCM_AutomatedVehicles_e.pdf>.



Transport Canada and the CCMTA have set testing guidelines for the provinces for levels 3, 4 and 5 driving automation systems in the *Testing Highly Automated Vehicles in Canada* publication.¹³ Any trial organization must ensure that the highly automated vehicle (HAV) conforms to the federal *Motor Vehicle Safety Act* (MVSA), and if wireless technologies are involved, ensure compliance with certification and licensing requirements established by Innovation, Science and Economic Development Canada (ISED). Additionally, the trial organization must comply with each province's licensing, registration and insurance requirements. The CCMTA's *Canadian Jurisdictional Guidelines for the Safe Testing and Deployment of Highly Automated Vehicles*¹⁴ (HAV Testing Guidelines) supplement the testing guidelines and provide additional guidance on how to prepare and roll out AVs and maintain road safety.

Transport Canada has also provided policy guidance on safety in its report, *Safety Assessment for Automated Driving Systems in Canada*, in order to assist ADS (automated driving systems) developers. Safety in the context of ADS primarily relates to:

- The design and validation of the vehicle;
- Safety systems within the vehicle for driver accessibility; and
- Cyber security and data management for data.¹⁵

Canada's *Safety Framework for Automated and Connected Vehicles* not only provides guidance for the safe deployment of automated and connected vehicles on public roads, but also sets out a flexible approach by utilizing non-regulatory tools to support safe testing of ADS. utilizing non-regulatory tools to support safe testing of ADS.¹⁶



13 Transport Canada, *Testing Highly Automated Vehicles in Canada* (16 May 2018), online (pdf): <<https://www.tc.gc.ca/en/services/road/safety-standards-vehicles-tires-child-car-seats/testing-highly-automated-vehicles-canada.html>>.

14 Canadian Council of Motor Transport Administrators., *Canadian Jurisdictional Guidelines for the Safe Testing and Deployment of Highly Automated Vehicles* (June 2018), online: <<https://www.ccmta.ca/images/publications/pdf/CCMTA-AVGuidelines-sm.pdf>>.

15 Transport Canada, *Safety Assessment for Automated Driving Systems in Canada* (January 2019), online (pdf): <https://www.tc.gc.ca/en/services/road/documents/tc_safety_assessment_for_ads-s.pdf>.

16 Transport Canada, *Canada's Safety Framework for Automated and Connected Vehicles* (February 2019), online (pdf): <https://www.tc.gc.ca/en/services/road/documents/tc_safety_framework_for_acv-s.pdf>.



Transport Canada has also released Canada’s *Vehicle Cyber Security Guidance* with non-prescriptive guiding principles to ensure that the technology driving autonomous vehicles is secure. The key principles organizations involved in the development and testing of automated vehicles are encouraged to follow are: 1) identification of management systems for cyber security risks; 2) adopting appropriate safeguards; 3) detecting, monitoring and responding to cyber security events; and, 4) recovering efficiently from any cyber security events that occur.¹⁷

In addition to the federal government’s testing guidelines for provinces discussed above, there are a few other ongoing regulatory projects of note:¹⁸

British Columbia	Ontario	Quebec
The Ministry of Transportation and Infrastructure has an AV Working Group that monitors progress within the AV field, but there is no timetable for testing policies. Nothing related to developing the AV industry was included in the 2020 BC budget.	The MTO launched a 10-year pilot program in 2016 to test AVs. The program was last updated in 2019. Now the pilot only applies to levels 4 and 5 automation (as defined by the SAE). Levels 1 through 3 are permitted on Ontario’s public roads. ¹⁹	SAAQ has opened the door to the implementation of pilot projects to test AVs. The Highway Safety Code (HSC) was amended in 2018 to introduce an autonomous vehicle definition and create an avenue for a pilot project approval. ²⁰

Driverless vehicle testing and deployment

As discussed above, while the federal government, through Transport Canada, is responsible for setting and enforcing compliance with motor vehicle safety standards, the provinces and territories are responsible for the licensing of drivers, vehicle registration and insurance, as well as laws and regulations regarding the safe operation of vehicles on public roads. As such, provinces and territories are also responsible for approving and overseeing trials of automated vehicles that take place within their jurisdictions, which may involve seeking guidance from Transport Canada regarding trial applications and best practices, as well as the provinces and territories looking to each other (for example, Ontario’s Pilot Program, discussed below), in order to develop standards for vehicle testing and deployment. Provinces and territories are also responsible for adapting local infrastructure to support AV deployment.

17 Transport Canada, *Canada’s Vehicle Cyber Security Guidance* (March 2020), online (pdf): https://www2.tc.gc.ca/documents/cyber_guidance_en.pdf at 13.

18 Transport Canada, *Testing Highly Automated Vehicles in Canada* (16 May 2018), online (pdf): <https://www.tc.gc.ca/en/services/road/safety-standards-vehicles-tires-child-car-seats/testing-highly-automated-vehicles-canada.html>.

19 Ministry of Transportation, “Ontario’s Automated Vehicle Pilot Program”, online: MTO <http://www.mto.gov.on.ca/english/vehicles/automated-vehicles.shtml>.

20 Societe de l’assurance automobile Quebec, « Autonomous Vehicles », online : SAAQ <https://saaq.gouv.qc.ca/en/road-safety/modes-transportation/autonomous-vehicles/>.



The main federal and provincial/territorial schemes regarding AV testing and deployment are summarized below:

Region	Agency
Federal	At the federal level, section 7(1)(a) of the MVSA permits testing. Section 7(1)(a) provides for an exception that allows people or companies to temporarily import a vehicle that does not comply with the Canadian Motor Vehicle Safety Standards, if the vehicle is for testing, demonstration or evaluation. ²¹ Transport Canada's Innovation Centre permits testing of AV truck platooning. The federal government also amended the Motor Vehicle Safety Regulations, ²² adding section 11.1, to give more flexibility on the length of time that an automated or other temporarily imported vehicle may be imported into account beyond the one-year limit that previously existed in Schedule VII of the Regulations. This will allow more time to evaluate the technology before the requirement of destruction or exportation.
British Columbia	British Columbia does not have any AV testing regulations. The province will likely follow the CCMTA's HAV Testing Guidelines when implementing testing regulations but at present the vehicle must comply with MVSA regulations. Additionally, the company conducting AV trials will likely have to make a declaration that they have addressed any safety concerns associated with the trial AVs.
Ontario	<p>The MTO's Automated Vehicle Pilot Program permits companies to apply to test driverless vehicles on public roads. The program prohibits the use of AVs (levels 4 and 5) except as permitted by the pilot project. If the vehicle was originally manufactured as an AV, the owner must be the original manufacturer and be a company as defined by the MSVA. If the vehicle was converted into an AV, the owner must be the person who converted the vehicle, and must be a tech company, research institution or AV manufacturer. The Registrar must be satisfied that the owner has expertise to properly convert vehicles into AVs. In addition, the vehicle must have a disengagement/engagement mechanism, failure alert, and mechanism enabling the driver to take over all dynamic driving tasks. Finally, companies must obtain approval from the MTO in order to test AVs (levels 4 and 5) and a minimum CA\$5 million in liability insurance and CA\$8 million for vehicles with a seating capacity of eight or more passengers.</p> <p>Pilot project applications must be evaluated and accepted by the Minister.</p>
Quebec	Quebec's HSC allows for AV testing applications but does not specify terms for AV testing if the application is approved. The CCMTA's HAV Testing Guidelines will likely be followed when the province implements testing regulations. The vehicle must comply with MVSA regulations and the company conducting AV trials will likely have to make a declaration that they have addressed any safety concerns associated with the trial AVs. Section 633.1 of the HSC provides successful applicants with a three-year period to conduct tests in the province, which the Minister may extend by up to two years if the Minister considers it necessary. ²³
Other Canadian jurisdictions	<p>The CCMTA recommends any testing regulations be at least as strict as those implemented in Ontario. As such, a disengagement/ engagement mechanism, failure alert, and mechanism enabling the driver to take over all dynamic driving tasks are all likely to be required for AVs that are operated with a driver. Companies will need to obtain a test permit pursuant to an approved application to test on public roads and have a minimum of CA\$5M in liability insurance coverage and beyond CA\$5M when testing larger vehicles (8 or more passenger capacity). Moreover, employees of the company testing the AV will likely be required to complete training (provided by the company) with respect to the capabilities and limitations of the test vehicle. The training logs must be submitted to the applicable provincial agency.</p> <p>On March 4, 2020, the Province of Manitoba introduced legislation to allow the safe testing of automated vehicles in Manitoba. Bill 23 enacts the Vehicle Technology Testing Act and amends various Acts</p>
All jurisdictions	Underwriters Laboratories (UL) has released UL 4600, "Standard for Evaluation of Autonomous Products" which is the first dedicated safety standard for fully autonomous vehicles.

²¹ Motor Vehicle Safety Act, SC 1993, c 16.

²² Motor Vehicle Regulations, CRC, c 1038.

²³ Highway Safety Code, 1986, C-24.2.



In sum, the Canadian federal government has taken on a leadership role to ensure consistency across all jurisdictions by providing guidance on the future of the AV industry. Canada is highly ranked in KPMG's latest report on autonomous vehicles readiness as countries continue to move forward with testing.²⁴ The current regulatory environment in Canada is supportive of the development and use of AVs and Ontario is the leader for testing and developing AV technology in the country.²⁵ Ontario released its CAV readiness plan in 2020 setting out what is required from the public sector to prepare for CAVs and the effects they will have on the Greater Toronto and Hamilton Area and all communities connected by Metrolinx.²⁶

In regard to vehicle deployment in Canada, licensing and registration falls under provincial jurisdiction. While there are no specific regulations on deployment in British Columbia, in Ontario, *Regulation 517/18* under the *Highway Traffic Act* prohibits individual consumers from putting an AV (SAE levels 4 and 5) on public roads.²⁷ Similarly, in Quebec, *An Act to amend the Highway Safety Code and other provisions* prohibits consumers from having an AV (SAE levels 3-5) on public roads.

The provincial statutes do not directly address consumers taking rides from autonomous vehicles operating by companies, and interestingly, in Quebec, an AV shuttle pilot in Candiac is allowed to charge customers. In addition, *An Act respecting remunerated passenger transportation by automobile*,²⁸ which came into force on October 10, 2020, allows the Minister, by regulation and after consulting with the Société, to authorize the remuneration of passenger transportation in autonomous vehicles. An electric AV shuttle

project in the City of Calgary is also allowed to charge customers.²⁹ Earlier this year, the City of Hamilton announced details about upcoming testing on city streets. The Centre for Integrated Transportation and Mobility will install three devices on lamp standards and telephone poles in downtown Hamilton.³⁰ Finally, the University of Windsor was selected for an autonomous vehicle study that will be conducted on Highway 401 as they work to identify areas for improvement in the cars they test.³¹

Regardless, companies have to obtain consent for transporting consumers in autonomous vehicles. In Ontario, companies must obtain consent pursuant to Ontario's AV Pilot Project regulations in order to put an AV (SAE level 4-5) on the road. In Quebec, companies must obtain consent pursuant to *An Act to amend the Highway Safety Code and other provisions* to put an AV (SAE level 3-5) on the road, and in other jurisdictions, companies must obtain the Registrar's consent.



24 KPMG, "2020 Autonomous Vehicles Readiness Index", online (pdf): <<https://assets.kpmg/content/dam/kpmg/xx/pdf/2020/07/2020-autonomous-vehicles-readiness-index.pdf>>

25 Bill 23, *The Vehicle Technology Testing Act*, 2nd Sess, 42nd Leg, Manitoba, 2020 (first reading March 4, 2020).

26 Ontario Ministry of Transportation, CAV Readiness Plan (March 2020), online (pdf):< <https://tcdocs.ingeniumcanada.org/sites/default/files/2020-05/The%20Ministry%20of%20Transportation%20of%20Ontario%20%28MTO%29%20-%20CAV%20Readiness%20Plan.pdf>>

27 O Reg 517/18.

28 SQ 2019, c 18.

29 Naomi Wolf, "You can ride a driverless shuttle for free in Calgary starting Saturday", CBC News (3 September 2018), online: <<https://www.cbc.ca/news/canada/calgary/calgary-autonomous-shuttle-zoo-spark-1.4803460>>

30 Tim Hogue, "Hamilton puts autonomous vehicles to the test", *Hamilton Spectator* (15 February 2020), online: <<https://www.hamiltonnews.com/news-story/9855268-hamilton-puts-autonomous-vehicles-to-the-test/>>

31 Dave Waddell, "Province selects University of Windsor for autonomous vehicle study" *Windsor Star* (21 April 2020), online: <<https://windsorstar.com/news/local-news/province-selects-university-of-windsor-for-autonomous-vehicle-study>>



SPOTLIGHT

Toronto is teaming up with the Toronto Transit Commission (TTC) and Metrolinx to pilot an autonomous shuttle program, which is projected begin running on public roads as soon as Spring 2021.³²

The City of Toronto, TTC and Metrolinx put out a public request for information, calling on those in the tech industry working on automated shuttles to share information on potential suppliers, related software, and solution providers so the city can understand what's available on the market, and any limitations.³³

The shuttle would be an automated vehicle (AV) that is mostly self-driving with an on-board human attendant at all times. The shuttle operator must comply with Ontario Regulation 306/15, Pilot Project - Automated Vehicles to the Highway Traffic Act in order to operate on a public roadway; approval by the Registrar will be a requirement of the request for proposals to original equipment manufacturers of shuttle vehicles.³⁴

Toronto is the first city to devote full-time staff to AVs and is in the midst of a Three-Year Automated Vehicles Work Plan, which will direct further investigations into the role that AVs will play within its transportation system and wider city planning.

The Canadian Urban Transit Research and Innovation Consortium (CUTRIC) also received over \$1 million in funding from its partners and the federal government to establish the National Academic Cluster for Smart Vehicles (NAC-SV). They are working to standardize the technology needed to use in transit and mass-mobility and are hoping to achieve multi-manufacturer interoperability to allow cities and transit agencies more choice in the autonomous shuttles and suppliers that they are using.³⁵

Liability

Canada has not defined what particular liability regimes apply to AVs in the event of an accident. However, it is reasonable to assume that anyone who causes or contributes to an injury or damages may be held liable. Accordingly, relevant liability regimes will depend on a variety of factors, including the degree of the vehicle's autonomy, and the nature of the accident. Canada's

tripartite regulatory regime (see "Regulatory Overview" section above) may also result in different liability rules across provinces, as the laws and regulations regarding safe operation of vehicles on public roads remains under provincial jurisdiction.

The extent of liability, including who may be responsible, will largely depend on the vehicle's degree of autonomy and an analysis of the various inputs to

32 City of Toronto, "Autonomous Shuttle Trial", online: <https://www.toronto.ca/services-payments/streets-parking-transportation/transportation-projects/automated-vehicles/automated-vehicles-pilot-projects/automated-shuttle-trial/>

33 Memorandum from TTC Board to Chief Customer Officer, "Automated Transit Shuttle Pilot Project" (12 June 2019), online (pdf): *Toronto Transit Commission*

34 Memorandum from TTC Board to Chief Customer Officer, "Automated Transit Shuttle Pilot Project" (12 June 2019), online (pdf): *Toronto Transit Commission* https://www.ttc.ca/About_the_TTC/Commission_reports_and_information/Commission_meetings/2019/June_12/Reports/18_Automated_Transit_Shuttle_Pilot_Project.pdf at 6.

35 CUTRIC, "Cutric Partners Launch the First Research Group on Smart and Autonomous Vehicles" (5 March 2020), online: <https://cutric-crituc.org/cutric-partners-launch-the-first-research-group-on-smart-and-autonomous-vehicles/>



the AV's system. The range of potentially liable persons includes drivers, manufacturers and anyone who could be responsible at law for causing or contributing to the incident.

Generally, discussion of liability in the AV context engages (i) traditional negligence, (ii) no fault liability, (iii) strict liability, (iv) product liability, (v) negligence per se and (vi) criminal liability, as potentially applicable regimes.

- **Traditional negligence (of the operator):** Drivers have a duty to take reasonable care³⁶ in the operation of their vehicles. Drivers are liable for damages they cause in breach of this duty of reasonable care. In traditional rules of negligence, the wrongdoer must compensate the victim for the harm suffered. This liability regime may be an appropriate fit for discerning liability in the context of AV accidents, because its basis in “reasonableness” offers the requisite flexibility for responding to society’s evolving understanding of AV technology and capabilities. Contemporary resolutions are highly influenced by a mandatory-insurance regime that distributes liability according to the particulars of each accident, as outlined by corresponding statutory guidelines.
- **No-fault liability:** Traditionally, a no-fault liability regime prohibits accident victims from suing other drivers, unless their injuries reach a certain degree of severity. In the context of AV accidents, the no-fault regime may be extended to preclude claims against other drivers altogether, on the basis that relief from an accident flows directly from the manufacturer or their insurance company. As responsibility for the accident shifts away from the driver, no-fault systems may become more prevalent. Also, it will become increasingly difficult to attribute liability to the driver in circumstances where the driver has become a passenger.³⁷ Changes to provincial motor vehicle

legislation defining who is the “operator” of an AV may come into play.

- **Strict liability:** Strict liability could be an alternative to negligence-based liability. This would be particularly relevant in the event that an AV was deemed non-compliant with MVSA standards. Strict liability holds the defendant, in this case the manufacturer or the driver, legally responsible for the accident, regardless whether a negligent or intentional act was committed.³⁸ This theory may be especially applicable to drivers of early market autonomous vehicles because they will likely be more knowledgeable of the risks that driving an AV entails, and may consequently bear the associated costs from accidents regardless whether they are legally at fault.³⁹ However, if the auto-pilot feature of a vehicle is engaged, and the driver’s use of that feature was proper, it may be difficult to argue that the driver was at fault.
- **Product liability:** Liability in the event of an accident will inevitably shift towards the manufacturer (or manufacturers) as the particular technology retains greater control over the vehicle. Product liability claims are based in negligence. In Ontario, there are three main types of negligence establishing tort liability for damages or injuries caused by defective products: (a) negligent manufacture, (b) negligent design, and (c) failure to warn. It is the obligation of the plaintiff to establish that negligence exists. The defendant can defend the negligence claim by producing evidence that demonstrates how they are not responsible, including by demonstrating compliance with regulatory and industry standards.
- While this liability regime seems applicable in theory, it may be unsuitable for victims of AV accidents in practice. The development of an AV transportation system involves inputs from various design and system authorities. The systems authority would

36 Zev Winkelman et al., *When Autonomous Vehicles are Hacked, Who is Liable?* (2019) Rand Corporation, at 72. Online: https://www.rand.org/pubs/research_reports/RR2654.html.

37 James M Anderson et al., *Autonomous Vehicle Technology: A Guide for Policymakers* (2016), Rand Corporation, at 118. [Autonomous Vehicle Technology: A Guide for Policy Makers]

38 CED (online) *Torts, Principles of Liability* (11.1.(c)).

39 *Autonomous Vehicle Technology: A Guide for Policy Makers* supra note 2 at 114.



ensure that, when these groups are brought together, the result is a functional and safe system.⁴⁰ The rollout of a continent wide transportation system would require collaboration amongst all of these parties, possibly contributing to ambiguity about overall responsibility for vehicle safety. Accordingly, diagnosing a specific product defect will be very difficult, as will be determining who should be responsible for the defect. The requisite due diligence associated with the discovery process will require substantial expertise and time; it will likely be too expensive for individual claimants.

- **Negligence per se:** In the AV context, a negligence per se regime would inevitably require a statute to be passed or regulations to be established providing the requisite rules to which manufacturers and design and system authorities must adhere. Liability would be found when a party failed to abide by the established rules.
- This liability regime may be more advantageous than traditional negligence or strict liability standards because it allows injured parties to recover damages, while still promoting the development of safe autonomous vehicles.
- **Criminal liability:** Traditionally, criminal liability applies to any vehicular crime that has a mens rea requirement.⁴¹ However, the autonomous element of AVs raises a number of issues for traditional criminal applications; these issues proliferate as control of the vehicle shifts from driver to operator. For example, legislators will have to consider whether to place criminal responsibility in the event of a hack, technological malfunction, terrorist attacks, drug trafficking and other criminal activity that could utilize an AV.⁴²

In sum, whether the fleet operator, seller, re-seller, manufacturer or parts manufacturer could be liable in the event of an accident will depend on the nature of the legal relationship with the plaintiff. It will also depend on the nature of the specific AV accident, although, for sellers and resellers, in particular, liability will likely hinge on whether they are involved in the manufacture or operation of the AV. Further, whether the test driver or negligent hiring standards are to blame will depend on the circumstances of the case. While no such case exists in Canada, it is more likely that enforcement will first turn to the manufacturer, before attributing liability to the test driver or negligent hiring standards.

As previously stated, there is no current federal law regulating automated driving. Responsibilities for AVs will be shared between federal and provincial powers, owing to Canada's constitutional framework. That being said there are a few preexisting laws and guidelines of note that may address liability on a case-by-case basis, including:

- The *MVSA* safety standards for vehicles;
- The *Criminal Code* requirements for the safe operation of a motor vehicle which prohibit dangerous and careless driving;
- Transport Canada guidelines, released April 12, 2019, that direct the safe conduct of automated vehicle trials in Canada, agreed upon by federal, provincial and territorial representatives of the Canadian Council for Motor Transport Administrators (CCMTA).⁴³ The guidelines, however, are intended to cover temporary trials of AVs, and not their permanent market deployment.

40 Roger Kemp, *Autonomous Vehicles-Who Will Be Liable for Accidents*, (2018) 15 *Digital Evidence & Electric Signature* LR 33 at 37.

41 Dangerous driving and criminal negligence are two examples of objective *mens rea* offences which are premised on the accused's degree of departure from the standard of care.

42 Frank Douma & Sarah Palodichuk, *Criminal Liability Issues Created by Autonomous Vehicles* (2012) 52 *Santa Clara* LR 4 at 1163. [Criminal Liability Issues Created by Autonomous Vehicles]

43 *Ibid.*



- CCMTA guidelines, published in June 2018, which provide that for vehicles classified as SAE Level 4⁴⁴ or 5,⁴⁵ which may be operated without a licensed driver onboard and where the dynamic driving task may be performed independent of human control, new statutes or regulations may be required to establish responsibility and liability for violations of traffic laws. Product liability issues arising from such cases may be matters of civil process ex post facto but should not impact the enforcement of laws contemporaneously with operation⁴⁶.

Provincial policy statements, as well as limited existing regulations, also shed light on liability issues in certain circumstances:

- The Ontario Ministry of Transportation has mandated that drivers will still need to be in full care and control of vehicles with SAE level 3 technology and all existing laws (such as distracted, careless and impaired driving laws) will continue to apply to drivers of these vehicles. Drivers are responsible for the safe operation of these vehicles at all times.⁴⁷
- In 2016, Ontario launched a pilot program to allow the testing of automated vehicles on its roads. The program allows eligible participants (i.e. auto manufacturers, technology companies, academic and research institutions, and parts manufacturers) to apply for a permit to test SAE Level 3, 4 and 5 automated vehicles under strict requirements outlined in Regulation 306/15: Pilot Project – Automated Vehicles of the Highway Traffic Act.

One of the requirements for participants under the pilot program is to accept liability in an at-fault collision caused by the technology, if driverless.⁴⁸

Although liability concerns arising in the AV context remain, for the most, uncharted territory, a March 2020 publication of the Ontario Ministry of Transportation’s “CAV Readiness Plan” outlines regulators’ objectives to establish liability standards. Objectives outlined in the report include:

- Developing new policies to address responsibility and liability concerns when transferring customers from public transit services to private mobility services;⁴⁹
- Developing regulations on liability, insurance and incident responsibility requirements for CAV operators for transit services, pilot programs, personal and shared use;⁵⁰
- Identifying areas where new policies are required to address responsibility and liability concerns when transferring customers from public transit services to private mobility services, especially in the case when the two services are integrated and co-operating to fulfill passenger trips;⁵¹ and
- Developing insurance coverage requirements for personal and commercial CAV operations, as part of pilot programs and regular use, as well as defining incident responsibility and liability.⁵²

So, when can Canadians and AV industry stakeholders expect an established liability regime to materialize? An October 2020 report published by Ontario’s Autonomous

44 Ministry of Transportation, “Ontario’s Automated Vehicle Pilot Program” online: <http://www.mto.gov.on.ca/english/vehicles/automated-vehicles.shtml>. [Automated Vehicle Pilot Program]. SAE Level 4 is “High Driving Automation”, where “The sustained and ODD-specific performance by an ADS of the entire DDT and DDT fallback without any expectation that a user will respond to a request to intervene.”

45 Ibid. SAE Level 5 is “Full Driving Automation”, where “The sustained and unconditional (i.e., not ODD-specific) performance by an ADS of the entire DDT and DDT fallback without any expectation that a user will respond to a request to intervene.”

46 Canadian Council of Motor Transportation Administrators, “Canadian Jurisdictional Guidelines for the Safe Testing and Deployment of Highly Automated Vehicles: Automated Driving System Levels 3-4-5” (June 2018) at 65. Available from: <https://ccmta.ca/en/reports-publications/category/automated-and-connected-vehicles>.

47 Automated Vehicle Pilot Program supra note 10. SAE Level 3 is “conditional automation”, where the driver is a necessity, but not required to monitor the environment.

48 Ministry of Transportation, Ontario’s Automated Vehicle Pilot Program [Internet]. 2019. Available from: <http://www.mto.gov.on.ca/english/vehicles/automatedvehicles.shtml>

49 Ministry of Transportation, CAV Readiness Plan (March 2020), at 23. Available from: <https://autonomoustransportation.ca/resources/>

50 Ibid at 35.

51 Ibid at 38.

52 Ibid at 43.



Vehicle Innovation Network (AVIN) and Deloitte predicts that “the introduction of new legislation specific to the automotive and mobility landscape (e.g., liability and insurance models as well as privacy requirements) ... will come into force in the next 4-5 years and beyond”, following the current period of privacy legislative updates and AV testing.⁵³ For now, no established legislative framework for liability in Canada exists.

As our understanding of key issues develops through testing and technological advancements over time, so too will our understanding of potential exposure to liability.

Data privacy and security

Canada’s national and provincial data protection laws are principles-based and provide a pragmatic and flexible framework that attempts to balance the right of an individual to control the collection, use, disclosure and retention of their personal data with the legitimate business interests of organizations that seek to use that personal data. In Canada, there are separate laws regarding the collection, use and disclosure of personal data in the private sector, the public sector as well as the healthcare sector.

The federal Personal Information Protection and Electronic Documents Act (SC 2000, c 5), commonly known as PIPEDA, applies to the collection, use and disclosure of personal data (referred to as “personal information” in Canadian legislation) by private sector organizations in the course of commercial activities.

British Columbia, Alberta and Quebec have enacted private sector statutes substantially similar to PIPEDA. Where an activity involving personal data takes place wholly within a province, provincial privacy legislation will apply. Where no provincial privacy legislation exists, or where personal data crosses provincial or international borders, PIPEDA will apply. Original equipment manufacturers, technology companies

and other private sector organizations involved in autonomous vehicles will be subject to PIPEDA and/or one of the provincial statutes.

Every jurisdiction in Canada has enacted public sector privacy legislation. Federally, the Privacy Act (RSC 1985, c P-21) governs the collection, use and storage of personal data by federal public sector organizations. This legislation applies to government ministries, institutions and agencies of the federal government, such as Transport Canada. Each province has similar legislation governing the collection, storage and use of personal data in the provincial public sector, which includes municipalities. Public sector entities responsible for the infrastructure around autonomous vehicles will be subject to public sector statute.

In the case of public-private partnerships or other consortium-based activities, the individual participating entities will each be governed by different privacy legislation.

Private sector privacy laws are consent-based, meaning that subject to limited exceptions, private sector organizations must obtain consent (implied or express, depending on a number of factors) from individuals for the collection, use and disclosure of their personal information. In order for consent to be valid, it must be reasonable to expect that individuals would understand the nature, purpose and consequences of the collection, use or disclosure of the personal information to which they are consenting. In other words, even if an organization obtained consent, organizations may collect, use and disclose personal information only for purposes that a reasonable person would consider is appropriate given the circumstances. For example, collecting the number of passengers in an autonomous vehicle for the purpose of safety measures would be reasonable; whereas collecting passenger ethnicity for the purposes of serving advertisements via the infotainment system may be found unreasonable.

⁵³ AVIN “ecosystem analysis and roadmap 2020: Strengths, challenges, and opportunities across Ontario’s automotive and mobility ecosystem ” online: [https://oce-ontario.org/docs/default-source/publications/fy2018-2019-oce-avin-annual-report_final-\(2019-06-28\).pdf?sfvrsn=2](https://oce-ontario.org/docs/default-source/publications/fy2018-2019-oce-avin-annual-report_final-(2019-06-28).pdf?sfvrsn=2) at 64. AVIN is an organization led by the Ontario Ministry of Excellence, and supported by the Government of Ontario’s Ministry of Economic Development, Job Creation and Trade (MEDJCT) and Ministry of Transportation (MTO).



For public sector bodies, all jurisdictions in Canada link the collection of personal information to a purpose. Public sector institutions may not collect personal information unless the purpose for such collection is one enumerated in the organization's applicable statute. For the most part, the permissible purposes for collection fall into three general categories:

- The information collection activity is expressly authorized by the statute;
- The information relates directly to and is necessary for the operating program or activity of that public body; and
- The information is collected for law enforcement.

As a result, public bodies such as municipalities or electricity distributors may only collect the personal information necessary in order to provide the autonomous vehicle services.

Privacy laws do not prescribe how often information can be accessed. Generally, control of access is regarded as a safeguard measure, where access is limited to authorized individuals who require access in order to perform their obligations. This is generally stipulated in internal policies and procedures, as well as set out in contractual arrangements between parties, including between a public sector body and privacy sector organization.

PIPEDA and provincial private sector statutes require organizations to implement safeguards that are appropriate to the sensitivity of the personal information. Safeguards should include physical, technical and administrative controls to prevent loss or unauthorized access to or modification or disclosure of personal information. These safeguards should contemplate the secure transmission and storage of personal information.

Under public sector legislation, many jurisdictions have formal requirements whereby the public body is to establish and maintain appropriate safeguards against such risks as accidental loss or alteration, and unauthorized access, collection, use, disclosure or disposal.

Personal information collected by an institution that is subject to the provincial public sector privacy law in

British Columbia or Nova Scotia may not transfer that personal information outside Canada or otherwise allow access to that personal information from outside Canada, subject to certain exceptions. Therefore, a private sector company, such as a cloud-based service or vehicle manufacturer working with the public sector in British Columbia or Nova Scotia may be prohibited from storing personal information outside of Canada. Additionally, many provincial and federal public sector bodies have formal policies requiring data localization of personal information and in some cases, information generally.

Under private sector and public sector data protection legislation, individuals have a right to access the information held about them. The maximum period that organizations have to respond varies. Under PIPEDA, responses to such requests must be within 30 days. This timeline can be extended in certain cases. All access provisions contain exceptions. For example, under PIPEDA, access may be refused if providing access would reveal confidential commercial information, or providing access could reasonably be expected to threaten the life or security of another individual, or if data was generated in the course of a formal dispute process.

Currently, Canadian legislation does not contain an express right to erasure; however, an individual may withdraw their consent to the processing of his or her personal data under Canadian private sector legislation. If there is no further legitimate purpose for which the personal data can be lawfully retained, this may involve the requirement to delete the personal information.

Further, individuals have the right to correct their personal information under most Canadian privacy statutes. The right to correction may also include the right to have incorrect data deleted or noted as being in dispute. The rights are subject to any statutory requirements that may impose retention periods, preventing a request for delete. Notably, data that has been aggregated or anonymized does not need to be deleted.

There are no specific Internet of things (IoT) statutes that govern consumer data. The data collected by IoT would be governed by either the private sector regime or public sector regime, or both, depending on the organizations involved, the data and the



purpose. In August 2020, the federal Office of the Privacy Commissioner of Canada released its guidance for manufacturers of IoT devices, which includes guidelines on obtaining consent, transparency on data processing and best practices around limiting collection of information.⁵⁴

Canada's private sector privacy regime is currently being overhauled, with new modernized statutes expected to come into force in late 2021 and 2022. On November 11, 2020, Canada's Minister of Innovation, Science and Industry, Navdeep Bains, introduced Bill C-11 for the Digital Charter Implementation Act, 2020 ('DCIA'). Bill C-11 aims to modernize the framework for the protection of personal information in the private sector and provide individuals with greater control over their information. Bill C-11 consists of two parts – Part 1, which would enact the new Consumer Privacy Protection Act (CPPA), and Part II, which would enact the legislation to establish the Personal Information and Data Protection Tribunal (Tribunal). It also incorporates previous amendments made to PIPEDA in 2015 via the Digital Privacy Act. The current PIPEDA would continue to exist, but it would be focused on the electronic documents aspect of e-commerce.

Of note, Bill C-11 introduce a definition of what it means to de-identify personal information, which means to modify personal information, or create information from personal information, by using technical processes to ensure that the information does not identify an individual or could not be used in reasonably foreseeable circumstances, alone or in combination with other information, to identify an individual. Organizations could use personal information that has been de-identified without consent for a socially beneficial purpose to a government institution (or part of a government institution in Canada), a health care institution, post-secondary educational institution or public library in Canada or to any organization that is mandated, under a federal or provincial law or by contract with a government institution or part of a government institution in Canada. The notion of

“socially beneficial purpose” is defined in the CPPA as a purpose related to health, the provision or improvement of public amenities or infrastructure, the protection of the environment or any other prescribed purpose. Minister Bains has stated that this provision is to encourage the use of data trusts by public and private stakeholders, given the expected increase in smart city and autonomous vehicle initiatives.

In addition to Bill C-11, the provinces of Quebec, British Columbia and Ontario are in various stages of the legislative process to overhaul their respective provincial privacy laws. Bill C-11 and the proposed provincial statutes are largely inspired by the E.U.'s General Data Protection Regulations (GDPR). It is widely believed that Bill C-11 and the provincial statutes will move through the legislative process quickly, with bipartisan support.

Canada has not yet enacted cybersecurity legislation. However, the Government of Canada has been active in promoting cybersecurity. Public Safety Canada is mandated to keep Canadians safe from a range of risks and manages the Canadian Cyber Incident Response Centre. Many government agencies are responsible for enforcing cybersecurity rules within their jurisdiction, including, but not limited to, law enforcement, Public Safety Canada, the Communications Security Establishment, the Royal Canadian Mounted Police, the Canadian Security Intelligence Service and the Office of the Privacy Commissioner of Canada.

Finally, Transport Canada included cybersecurity and data management policy guidance in its report *Safety Assessment for Automated Driving Systems in Canada* to assist developers of automated driving systems.

Telecommunications and 5G

The government of Canada recognizes that the development and deployment of 5G and next-generation networks is essential to Canada becoming a global center for wireless innovation and for ensuring that Canada is at the forefront of digital development and that Canadians have access to world-leading wireless infrastructure.

⁵⁴ The Office of the Privacy Commissioner of Canada, Privacy guidance for manufacturers of Internet of Things devices, issued August 2020, available at: https://www.priv.gc.ca/en/privacy-topics/technology/gd_iot_man/



The Government of Canada has incentivized 5G and next-generation network technology and investment by releasing licenced and licence-exempt spectrum⁵⁵ and making strategic investments in 5G technologies and infrastructure.⁵⁶ That being said, as it relates to vehicle communication, ISED has not taken a position on whether it prefers dedicated short-range communication (DSRC) or cellular vehicle-to-everything (C-V2X).

The 5850-5925 MHz band has been specifically designated for use by DSRC for developmental purposes⁵⁷ in support of ITS.⁵⁸ While the band has not been designated for use by C-V2X, ISED recognizes that C-V2X is gaining traction internationally and has indicated that it would be possible to use C-V2X in the 5850-5925 MHz band.⁵⁹

Equipment in the band operates on a license-exempt basis. ISED has elected to wait to make any changes in the 5GHz band until the future international approach to the band and ITS becomes more clear.⁶⁰

COVID-19 impact

Like many businesses, the public health and economic repercussions of the COVID-19 crisis has negatively affected AV companies operating in Canada, resulting in lay-offs, delays in product launches, and setbacks to the work of pilots.⁶¹ Of particular note, Google-affiliated Sidewalk Lab's proposed 12-acre smart neighborhood within the City of Toronto, in which autonomous vehicles would have played a prominent role, was cancelled, in part, due to economic uncertainty caused by the pandemic.⁶²

- 55 ISED, "Consultation on the Technical and Policy Framework for Licence-Exempt Use in the 6 GHz Band," (November 2020), Gazette Notice No. SMSE-014-20, online: < <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11643.html>>; ISED, "Consultation on the Technical and Policy Framework for the 3650-4200 MHz Band and Changes to the Frequency Allocation of the 3500-3650 MHz Band" (August 2020) SLPB-002-20 (i.e., 3800 MHz spectrum), online: <<https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11627.html>>; ISED, "Policy and Licensing Framework for Spectrum in the 3500 MHz Band," (March 2020) SLPB-001-20, online: < <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11584.html> >; ISED, "Decision on Revisions to the 3500 MHz Band to Accommodate Flexible Use and Preliminary Decisions on Changes to the 3800 MHz Band" (June 2019) SLPB-001-19, online: <[https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/SLPB-00119EN.pdf/\\$file/SLPB-001-19EN.pdf](https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/SLPB-00119EN.pdf/$file/SLPB-001-19EN.pdf)>; ISED, "Consultation on Revisions to 3500 MHz Band to Accommodate Flexible Use and Preliminary Consultation on Changes to the 3800 MHz Band" (June 2018) SLPB-004-28 at 1-6, online: <[https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/3500-Consultation02-2018-EN.pdf/\\$file/3500-Consultation02-2018-EN.pdf](https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/3500-Consultation02-2018-EN.pdf/$file/3500-Consultation02-2018-EN.pdf)>; ISED, "Technical, Policy and Licensing Framework for Spectrum in the 600 MHz Band" (March 2018) SLPB-002-18 at 6, online: <[https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/SLPB-002-18-600MHz-decision-e.pdf/\\$file/SLPB-002-18-600MHz-decision-e.pdf](https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/SLPB-002-18-600MHz-decision-e.pdf/$file/SLPB-002-18-600MHz-decision-e.pdf)>; ISED, "Consultation on Releasing Millimetre Wave Spectrum to Support 5G" (June 2017) SLPB-001-17, online: < [https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/slpb-001-17-5G.pdf/\\$file/slpb-001-17-5G.pdf](https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/slpb-001-17-5G.pdf/$file/slpb-001-17-5G.pdf) ISED, "Addendum to the Consultation on Releasing Millimetre Wave Spectrum to Support 5G" (June 2018) SLPB-005-18, online: < [https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/Addendum-2018-EN.pdf/\\$file/Addendum-2018-EN.pdf](https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/Addendum-2018-EN.pdf/$file/Addendum-2018-EN.pdf) >; ISED, "Decision on Releasing Millimetre Wave Spectrum to Support 5G" (June 2019) SLPB-003-19, online: < [https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/SLPB-003-19EN.pdf/\\$file/SLPB-003-19EN.pdf](https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/SLPB-003-19EN.pdf/$file/SLPB-003-19EN.pdf) >.
- 56 Government of Canada, "Government of Canada invests in research and development for technologies behind 5G networks" (25 January 2019), online: <<https://www.canada.ca/en/innovation-science-economic-development/news/2019/01/government-of-canada-invests-in-research-and-development-for-technologies-behind-5g-networks.html>> [Nokia Investment in 5G]; ISED, "Building a Nation of Innovators" (2019) at 55, online: <[https://www.ic.gc.ca/eic/site/062.nsf/vwapj/ISED_19-044_INNOVATION-SKILLS_E_web.pdf/\\$file/ISED_19-044_INNOVATION-SKILLS_E_web.pdf](https://www.ic.gc.ca/eic/site/062.nsf/vwapj/ISED_19-044_INNOVATION-SKILLS_E_web.pdf/$file/ISED_19-044_INNOVATION-SKILLS_E_web.pdf)> ["Building a Nation of Innovators"]; Huawei, "Huawei Canada Partners with Ontario Government to Hire Hundreds of Research Engineers" (8 March 2016), online: <<https://www.huawei.com/ca/news/ca-en/20160308huawei-canada-partners-with-ontar-ogovernment>>; Polytechnique Montréal, "Polytechnique Montréal and Huawei Canada establish the Industrial Research Chair in Future Wireless Technologies" (10 February 2017), online: <<https://www.polymtl.ca/carrefour-actualite/en/news/polytechnique-montreal-and-huawei-canada-establish-industrial-research-chair-future-wireless>>.
- 57 ISED expects this designation will be made permanent in a future spectrum allocation decision, the date of which is presently unknown.
- 58 ISED, "Spectrum Outlook 2018 to 2022" (6 June 2019) SLPB-003-18 at paras 177 and 180, online: <<https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11403.html>>; ISED, SAB-001-17 - Displacement of Existing Fixed Service Assignments in the Frequency Band 5850-5925 MHz, February 2017, <<https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11264.html>>.
- 59 ISED, "Spectrum Outlook 2018 to 2022" (6 June 2019) SLPB-003-18 at para 181, online: <<https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11403.html>>; Testing of C-V2X has also been done with cellular providers using cellular bands.
- 60 ISED, Spectrum Outlook 2018-2022, at 31, online: < [https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/Outlook-2018-EN.pdf/\\$file/Outlook-2018-EN.pdf](https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/Outlook-2018-EN.pdf/$file/Outlook-2018-EN.pdf) >
- 61 Autonomous Vehicle Innovation Network, "The Auto Sector and the COVID-19 Pandemic: Recovery Support and Opportunities" (June 2020), online: <https://oce-ontario.org/docs/default-source/publications/avin_quarterly-specialized-report_june-2020.pdf?sfvrsn=2>; Electric Autonomy Canada, "AV shuttle pilots in Toronto and Whitby and new investment in Ottawa's AV research facility will help advance the province's position in driverless technology and services" (28 October 2020), online <<https://electricautonomy.ca/2020/10/28/av-shuttle-pilots-ontario/>>; Electric Autonomy Canada, "Exit Sidewalk Labs, enter COVID-19: what impact on autonomous vehicles in Canada?" (21 May 2020), online: < <https://electricautonomy.ca/2020/05/21/exit-sidewalk-labs-enter-covid-autonomous-vehicles-in-canada/>>.
- 62 Sidewalk Labs, "Why we're no longer pursuing the Quayside project — and what's next for Sidewalk Labs" (7 May 2020), online: < <https://medium.com/sidewalk-talk/why-were-no-longer-pursuing-the-quayside-project-and-what-s-next-for-sidewalk-labs-9a61de3fee3a>>.



However, despite setbacks, proponents argue that the Canadian AV industry's outlook remains strong given Canada's significant automotive and technological capacity.⁶³ Further, to capitalize the urgent need to reduce human contact to fight COVID-19 and to survive the economic tumult caused by showdowns, a number of AV companies have launched new offerings and entered new markets. Of note, AV companies offering contactless short-haul logistic services, such as the

delivery of medicines, merchandise and food, have seen increased business interest and investment in light of COVID-imposed delivery constraints.⁶⁴

To date, COVID-19 has not materially altered AV politics in Canada, for instance, by encouraging AV-specific stimulus spending or encouraging governments to introduce overarching legislation for AVs.



63 Information and Communications Technology Council, "Advances in Connected and Autonomous Vehicles: Current State and Future Trends" (March 2020), online: <https://www.ictc-ctic.ca/wp-content/uploads/2020/04/CAVs-ENG.Final_.0423.pdf>; Toronto Region Board of Trade, "Getting Ready for Autonomy: AVs for Safe, Clean and Inclusive Mobility in the Toronto Region" (March 2020), online: <https://www.bot.com/Portals/0/NewsDocuments/TRBOT_AV_Report_FINAL_LR.pdf>. Electric Autonomy Canada, "Exit Sidewalk Labs, enter COVID-19: what impact on autonomous vehicles in Canada?" (21 May 2020), online: <<https://electricautonomy.ca/2020/05/21/exit-sidewalk-labs-enter-covid-autonomous-vehicles-in-canada/>>

64 Autonomous Vehicle Innovation Network, "The Auto Sector and the COVID-19 Pandemic: Recovery Support and Opportunities" (June 2020), online: <https://oce-ontario.org/docs/default-source/publications/avin_quarterly-specialized-report_june-2020.pdf?sfvrsn=2>; Electric Autonomy Canada, "Canada Pension Plan, Magna make major investments in self-driving firm Waymo" (6 March 2020), online: <<https://electricautonomy.ca/2020/03/06/canada-pension-plan-magna-invest-in-self-driving-firm-waymo/>>.



China



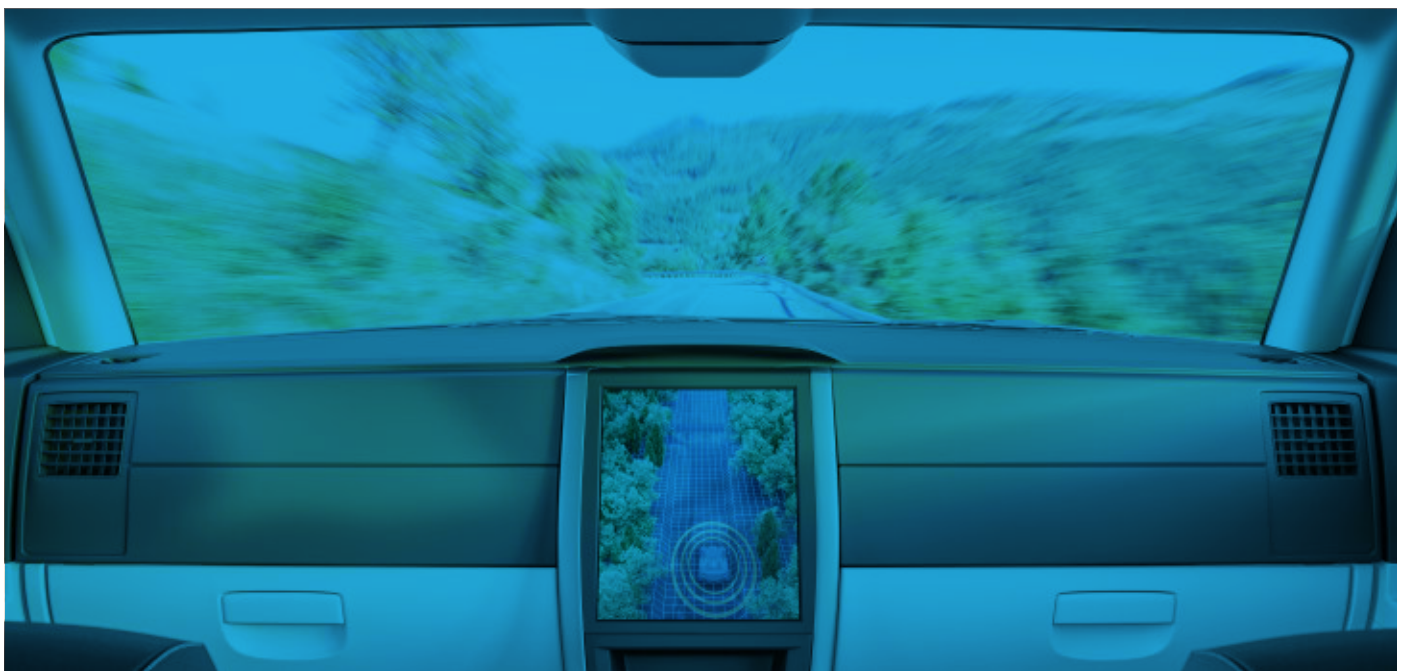
Regulatory overview

In China, an autonomous vehicle is usually referred to as an “intelligent connected vehicle” or a “driverless vehicle.” China enacted road safety laws and regulations to cover driverless vehicles, which are applicable nationwide. Local governments have also enacted their own regulations.

The regulatory agencies/authorities with oversight include the Ministry of Transport, National Development and Reform Commission, Ministry of Public Security, Ministry of Industry and Information Technology, Ministry of Science and Technology, Market Supervision and Admission, Ministry of Ecological Environment and local traffic control departments.

On the national level, the Ministry of Industry and Information Technology, Ministry of Public Security and Ministry of Transport, promulgated the Regulations on the Administration of Road Testing of Autonomous Vehicles (for Trial Implementation) on April 3, 2018 to advance the transformation, upgrading and innovation of transportation, and to regulate the administration of road testing of autonomous vehicles. On March 9, 2020, the Ministry of Industry and Information Technology released the recommended draft of national standards for automobile driving automation classification on the official website, which were implemented it on January 1, 2021. As such, China’s autonomous driving industry is accelerating the implementation of industry standards, and moving forward to carry out large-scale market production and application work.

These regulations are part of a broader effort on the part of the Chinese government to develop the autonomous driving industry as a part of the country’s overall plan to reorient its economy towards a more high-tech industrial model that includes autonomous vehicles and related technology.



In 2015, the State Council published a document entitled “Made in China 2025,” in which it detailed not only the reasoning behind this goal, but also the specific time frame in which they hope to achieve it. In this document, the State Council names 10 specific industries in which the People’s Republic of China (PRC) wants to take the lead. Three of them – robotics, new-generation information technology and new-energy vehicles – point toward the autonomous vehicle industry.

JANUARY 2018

National Development and Reform Commission launched the national innovative development strategy of intelligent vehicles.

MAY 2018

Guochun Zhai, Deputy Director of Ministry of Industry and Information Technology, said that China has achieved the fundamental and strategic advantages to develop autonomous vehicles as the result of development of the information technology industry to support the auto intelligence and connectivity.

The aforementioned “Medium- and Long-term Development Plan of Automobile Industry” proposed that by the end of 2020, the degree of intelligence shall be significantly enhanced, and the part of intelligence in automobile after-market and service industry shall account for more than 45 percent of the value chain. By 2025, key fields shall achieve full-aspect intelligence, and the intelligence degree in automobile after-market and service industry shall account for more than 55 percent of the value chain.

APRIL 2017

Ministry of Industry and Information Technology, National Development and Reform Commission, and Ministry of Science and Technology issued “Medium- and Long-term Development Plan of Automobile Industry,” highlighting autonomous vehicles as a transformational breakthrough and an opportunity to upgrade the domestic automobile industry.

APRIL 2018

Ministry of Industry and Information Technology, Ministry of Public Security and the Ministry of Transport promulgated the “Regulations on the Administration of Road Testing of Autonomous Vehicles (for Trial Implementation).”

APRIL 2018

Guobin Xin, Vice Minister of Industry and Information Technology, stated that the development of autonomous vehicles is not only an important means to solve the problems that the auto society faces such as traffic security, traffic jam, energy consumption, pollution emission, but also the core element to build “Smart Travel” and serve the new industrial ecology. Additionally, the development of autonomous vehicles is an important carrier to build China into a powerful nation in transport, build digital China and promote the construction of a “Smart Society.” It has become crucial to the transformation and upgrading of the automobile industry in the new era and the strategic highpoint of global automobile industry technology reform.

Looking ahead, the National Development and Reform Commission will enact regulations about the application of assisted driving function, public road test of intelligent vehicles, autonomous driving systems, the division of liabilities between the autonomous driving system and the driver, management of vehicle insurance, etc.



In regard to the vast amount of data collected by autonomous vehicles, certain types of consumer data could be deemed “important data” according to the Cybersecurity Law of the People’s Republic of China (CSL). Important data refers to the kind of data that, if divulged, could directly affect national security, economic security, social stability and public health and security, such as geography and mineral resources, etc. Important data cannot be transmitted abroad unless reviewed and approved by authorities. Also, there are special requirements for storage and protection of important data.

Notably, currently, there are no specific Internet of things (IoT) statutes in place that govern consumer data. Depending on how one defines “IoT statute,” the CSL, which governs consumer data, functions like a IoT statute in many respects.

In sum, the Chinese government has taken several steps to prepare the national infrastructure for autonomous vehicles. On December 25, 2018, the Ministry of Industry and Information Technology issued Action Plan on Car Networking (Autonomous Vehicle) Industry Development, proposing cooperation and co-construction, and promoting the infrastructure of the car networking industry. The plan proposed several aspects to improve the national infrastructure, including improving the construction of the communication network, the building and management of the big data and cloud platform and building the intelligent road infrastructure.⁶⁵

- On February 10, 2020, eleven national ministries including the National Development and Reform Commission, the Ministry of Industry and Information Technology and etc., collectively promulgated “the Innovative Development Strategy of Intelligent Vehicle” The strategy proposes that by 2025, the technology innovation, industrial ecology, infrastructure, regulations and standards, product supervision and network security system of China’s standard intelligent vehicles will be formed. By 2035, China’s standard intelligent vehicle system

will be fully completed. To this end, the state will issue policies to promote the development of road traffic automatic driving, and support the R & D and industrialization of common key technologies of intelligent vehicle infrastructure, as well as the construction of major projects of intelligent transportation and smart city infrastructure, etc.

- On March 26-29, 2019, Miao Wei, Minister of the Ministry of Industry and Information Technology, said at Bo’ao Forum for Asia that Ministry of Industry and Information and Ministry of Transport had reached a consensus that the government would devote itself to promoting the research on vehicle networking, and speeding up the intelligent and digital revolution on the highways in China.
- Finally, China is preparing the streets themselves for autonomous transit. For example, on May 24, 2019, Wei Lai Road street office in Zhengzhou, Henan Province, set up a strategic-cooperation relation with China United Network Communications Group Co., Ltd., aiming to push forward the construction of “Smart Street” in Henan Province.⁶⁶

Driverless vehicle testing and deployment

At present, in China, there are applicable regulations that permit companies to test driverless vehicles on public roads. “The Regulations on the Administration of Road Testing of Autonomous Vehicles (for Trial Implementation)” permit the road testing of autonomous vehicles within the territory of the People’s Republic of China.

There are also some applicable municipal regulations such as “The Regulations on the Administration of Road Testing and exemplary application of Autonomous Vehicles in Shanghai (for Trial Implementation).”

According to the “Regulations on the Administration of Road Testing of Autonomous Vehicles (for Trial Implementation),” a test vehicle including passenger

65 <http://www.miit.gov.cn/n1146295/n1652858/n1652930/n4509650/c6482536/content.html>

66 <http://dy.163.com/v2/article/detail/EFTINVRG0514TTJV.html>



vehicles and vehicles for commercial uses but excluding low-speed automobiles and motorcycles shall meet the following conditions:

1. It has undergone the registration for motor vehicles.
2. It satisfies all statutory testing requirements, except endurance, for the corresponding type of vehicles; if a particular statutory testing requirement is not met due to the self-driving function, the testing subject has to prove that the safety performance of the vehicle has not been jeopardized.
3. It can be steered manually and automatically and could switch between the self-driving mode and the manual driving mode in a safe, rapid and easy manner, accompanied with a warning sound, in order to ensure the vehicle could be switched to the manual driving mode immediately under any circumstance.
4. It has functions of recording, saving and monitoring online its status and is able to transfer real-time information listed in Item 1 through Item 3 and to automatically record and save the following information (for a period of at least 90 seconds prior to the accident or malfunction, which shall be stored for at least three years):
 - a. *Control mode of the vehicle.*
 - b. *Location of the vehicle.*
 - c. *Vehicle's state of motion, such as speed and accelerated speed.*
 - d. *Perception of and response to environment.*
 - e. *Real-time status of the vehicle's lighting and signaling systems.*
 - f. *External 360-degree video surveillance of the vehicle.*
 - g. *In-car video and audio monitoring records that reflect the status of the test driver and the human-computer interaction.*
 - h. *Remote control instructions (if any) received by the vehicle.*
 - i. *Malfunction (if any) of the vehicle.*

5. The test vehicle shall be used to conduct actual tests in certain areas, such as the closed road or venue, in compliance with the applicable industry standards of the State, testing requirements issued by provincial and municipal governments and testing evaluation rules of the testing subject, and fulfill conditions for road testing.
6. The self-driving function of the test vehicle shall be tested and verified by a third-party testing institute, which shall be a national, provincial or municipal accredited testing institute engaging in automobile-related business.

Additionally, according to "The Regulations on the Administration of Road Testing of Autonomous Vehicles (for Trial Implementation)," appropriate safety hardware/software must be established in a safety management plan and a test driver must sit in the cab of the test vehicle from the beginning to the end.

The driver must keep a close eye on the running status of the test vehicle and the surrounding environment throughout the test, and be ready to take control of the vehicle at any time. In practice, both L3 and L4 autonomous driving shall have a driver sitting beside the wheel. When the test driver finds it improper for the vehicle to run automatically or the system warns of the need to have manual operations, the driver shall take control of the vehicle immediately.

A test driver, the driver authorized by a testing subject to take charge of the testing process and take emergency measures against the test vehicle when an emergency arises, shall have the following requirements fulfilled:

1. Inked an employment contract or a labor service contract with the testing subject.
2. Obtained the driving license for steering the corresponding type of vehicles and having been experienced in driving for more than three years.
3. Have fewer than twelve points under the demerit point system in any of latest consecutive three demerit point periods.
4. Not been involved in any serious traffic violations in the latest year, such as driving at a speed 50 percent higher than the upper limit or running a traffic light.



5. Not been involved in driving after drinking alcohol or drunk-driving or taking psychotropic or narcotic drugs that are under control of the State
6. Not been involved in any traffic accidents that resulted in death or serious personal injuries.
7. Received self-driving training offered by the testing subject; familiarized himself or herself with testing rules for self-driving; mastered how to make operations during self-driving tests; and capable of responding to an emergency.
8. Other conditions specified in laws, regulations and rules.

Prior to running any tests, testing organizations shall file an application for permission to carry out road tests with the competent authority of provincial and municipal governments and should specify where the sections of roads selected for the scheduled tests are located. Each organization must buy the compulsory liability insurance for traffic accidents, worth of at least CNYS million (about US\$705,500) or provide, for each vehicle, a letter of guarantee on compensation of equivalent amount for accidents arising in road tests of self-driving functions.

According to “The Regulations on the Administration of Road Testing of Autonomous Vehicles (for Trial Implementation),” besides the requirements for the test driver and the test vehicle, the testing organization shall also meet the following conditions:

- a. *Be an independent legal person registered within the territory of the PRC.*
- b. *Have relevant business capabilities concerning intelligent connected vehicles, such as the manufacturing of automobiles and spare parts thereof, research and development of technologies, or experiments and tests.*
- c. *Be financially able to make civil compensation for likely damages caused by intelligent connected vehicles to individuals and property during the test.*
- d. *Have in place the evaluation rules for the test of self-driving functions of intelligent connected vehicles.*
- e. *Be able to conduct real-time remote monitoring of test vehicles.*
- f. *Be able to record, analyze and reproduce events performed with test vehicles.*

Spotlight

Test driving in Beijing

In June of 2020, Didi Taxi officially launched the automatic driving service. At the scene, CCTV anchorman experienced the automatic driving in the heavy rain in Shanghai. He was shocked by a sense of science fiction about future travel. In addition to Didi, driverless vehicles such as Xiaoma Zhixing, Baidu, Audi and BAIC, which have obtained the Beijing automatic driving test license plate, will drive on the test road.

During an ongoing test, the self-driving mode shall not be adopted, except when the test vehicle is running on the sections of roads selected for the testing purpose on the testing notice; the test vehicle shall be driven manually from the parking lot to the section of road selected for the testing purpose. Finally, during an ongoing test, a test vehicle shall not carry any persons or freights irrelevant to the test.

As it relates to vehicle deployment, there are currently no regulations permitting consumers to use, or prohibiting consumers from using, driverless vehicles for personal use. However, at present, all of the autonomous driving is experimental only.

However, even experimentally, autonomous vehicles began to be available to ordinary taxi passengers. On September 16, 2019, Shanghai city issued the first batch of exemplary application licenses of autonomous driving in Yangzi River Delta to SAIC Motor, BMW and Didi Chuxing and etc., allowing the companies to put their licensed autonomous vehicles into daily ordinary uses for normal passengers. For the first batch, each company can have 50 licenses maximum, with that amount to increase after six months of good performance.



Liability

In the event of a crash there are several liability regimes that may come into play including:

- “Product Quality Law of the People’s Republic of China” provides a regulatory system of obligations and warranties in order for manufacturers to meet quality and safety standards.
- “Law of the People’s Republic of China on Road Traffic Safety” regulates the liability of the parties concerned under the traffic accidents.
 - “Civil Code of the People’s Republic of China” (promulgated in May 2020 and would come into force on January 1, 2021) regulates the motor vehicle traffic accident liability.
- “Implementing Regulations on the Law of the People’s Republic of China on Road Traffic Safety.”
- “The Regulations on the Administration of Road Testing of Intelligent Connected Vehicles (for Trial Implementation)” regulates the handling of traffic violations and accidents.

Current road traffic safety laws are applicable to autonomous driving in regard to who or what may be liable for accidents involving autonomous vehicles. In the current road traffic safety law, negligence principles apply. As such, it is conceivable that sellers, re-sellers, manufacturers and/or test drivers could be held liable.

The confusion surrounding liability in these cases may be replaced by some clarity in the near future. The National Development and Reform Commission is set to enact regulations to address the division of liabilities between the autonomous driving system and the driver.

Data privacy and security

China is enacting Personal Information Protection Law (PIPL) as a unified code governing data privacy in PRC. PIPL, with the legislative methodology similar to GDPR, provides detailed provisions on what is personal information and what are the compliance obligations

to process the personal information. In addition, some other legal authorities stipulate personal information.

1. As per the draft PIPL, “consent” will no longer be the sole basis for processing personal information. Other legal bases include the necessity for entering into and performance of a contract where the person is a party, the necessity of performing of a legal duty or legal obligation.⁶⁷
2. Article 29 of “The Law of the People’s Republic of China on the Protection of Rights and Interests of Consumers” stipulates that companies’ seeking to collect and use personal information must acquire the consent of the data subjects beforehand, and that companies shall be held liable for the safety and integrity of the private data or personal information.
3. Article 22 of the CSL has the same requirements.
4. Article 41 of the CSL forbids the company to use the collected privacy data or personal information for objects irrelevant to the services provided by the companies.
5. Article 43 provides that the data subjects have the right of correction and deletion of personal information.
6. Advanced laws and regulations include, but are not limited to:
 - a. *Personal Information Protection Law (draft)*
 - b. *Data Security Law (draft)*
 - c. *Notice of the Cyberspace Administration of China on Seeking Public Comments on the Measures for Security Assessment for Cross border of Personal Information (draft for comment)*
 - d. *Notice of the Cyberspace Administration of China on Soliciting Public Comments on the Administrative Measures on Data Security (exposure draft)*

All aforementioned privacy data and personal information include collection of information from use of autonomous vehicles.

⁶⁷ <http://www.compliancereviews.cn/Arc-v.Asp?ID=1048>



Usually, consumer data would be deemed as personal information or privacy data in PRC, like vehicle information, location information, driving habits and so on.

There is no limitation on the types of personal information or privacy data one may collect, store, transmit or use, provided you have obtained the consent of the data subjects to engage in such data process activities, but such data process activities should be in accordance with the principle of “minimum & necessity” and are not in violation of laws or administrative regulations, and would not jeopardize the national security and public interests.

Data generally is only allowed to be stored and transmitted if:

1. The process activities are relevant to the gatherer’s functions and activities.
2. The process activities do not violate any laws or administrative regulations and do not breach any agreements with the data subject.
3. Process activities, including storage and transmission, have the prior consent of the data subject. And such data subject has been expressively notified of the content and scope process activities.
4. The personal information is secure.

In PRC, the data subjects, including consumers, have the right to delete the personal information if the collection, storage, use and disclosure of such information violate any laws and administrative regulations or breach the bilateral agreement. Data subjects also have the right to ask the company to correct their personal information if the collected or used information is incorrect. Like Australia, there is no historical equivalent to “right to be forgotten” in China, while there are relevant suits.

Cybersecurity in the Internet of things is mainly regulated by the CSL, especially classified protection of cybersecurity, which takes cybersecurity in the IoT into the supervision requirement. For example, recommended national standard regulates the expanded requirements based on the common requirements of cybersecurity in GBT22239-2019

“Basic Requirements for Graded System for Cybersecurity Protection of Information Security Technology.”

Other recommended national standards regulate the IoT. For example:

- GB/T 37044-2018: “Information Security Technology--Security Reference Model and Generic Requirements for Internet of Things.”
- GB/T 36951-2018: “Information Security Technology--Security Technical Requirements for Applying Perception Terminals in Internet of Things.”
- GB/T 37024-2018: “Information Security Technology--Security Technology Requirements of Gateway in Sensing Layer of the Internet of Things.”
- GB/T 37025-2018: “Information Security Technology--Security Requirements of Data Transmission for Internet of Things.”
- GB/T 37093-2018: “Information Security Technology--Security Requirements for IoT Sensing Layer Access to Communication Network.”
- YD/T 3751-2020: “Technology Specification for Data Security of Internet of Vehicle Information Services”

While the above mentioned standards do not mention autonomous driving specifically, the guidance or standards mentioned above describe best practices regarding cybersecurity. Some of them were issued by governmental agencies; some are issued by industrial associations (which are quasi-governmental agencies in China).

The Ministry of Industry and Information Technology issued “Guidance to the Standard System Construction of National Connected Vehicle Industry (Autonomous Vehicles),” which calls for an expedited process for the construction of autonomous vehicles standard system including both functional security of vehicles and key system units and information security.

Telecommunications and 5G

The Chinese government has made a widespread rollout of 5G a priority. On March 26-29, 2019, Miao Wei, Minister of the Ministry of Industry and Information



Technology, addressed at Bo'ao Forum for Asia that the application of 5G should be divided into "two eight"; that is, the communication between people takes 20 percent and the communication between things takes 80 percent. Among them, one of the biggest markets of mobile IoT is vehicle networking, which represents the application of 5G technology, especially by autonomous vehicles.

As it relates to spectrum, on December 1, 2018, the "Temporary Administrative Regulations on the Direct Connected Communication Use of 5905-5925MHz Spectrum on Car Networking (Autonomous Vehicles)," issued by Ministry of Industry and Information Technology, came into effect. The Chinese government has chosen cellular vehicle-to-everything (V2X) communication as the primary means for vehicle to vehicle remote interaction.

In June 2019, Ministry of Industry and Information Technology formally granted commercial licenses to China Telecom Group Co. Ltd., China Mobile Communications Group Co. Ltd., China United Network Communications Group Co. Ltd., and China Broadcasting Network Corporation Ltd.

In November 2019, the first "5G + intelligent agricultural machinery" innovation demonstration scene in China was initiated in Shanghai. 5G driverless harvesters automatically planned, turned, advanced and retreated and completed the harvest of rice fields one by one precisely.

In December 2019, the first 5G autonomous driving traffic management system in the world that integrates vehicles, roads, and smart cities officially landed in Shanghai and has opened to the public. Zhangjiang Hi-Tech Park and Human Horizons jointly demonstrated the future urban travel plan of "zero accident, zero emission and zero congestion."

The initiative is part of a larger Human Horizons project called "3 Smart" which focuses on creating an ecosystem of smart vehicles, roads and traffic management systems.

Spotlight

Other Important Data in AV/ICV Industries

Vehicle Condition Data

Take note of the "Technology Specification for Data Security of Internet of Vehicle Information Services", for the classified protection of data. The data related to users' personal privacy and public security must be classified into important data or sensitive data, the Internet of vehicles information service providers can determine the data sensitivity and the corresponding security level according to the data value, compliance requirements and their own business conditions in the application scenario.

In particular, according to Item 4 of Article 7 of "the Good Practices for the Administration of Road Tests for Intelligent Connected Vehicles (for Trial Implementation)", the intelligent connected vehicle applied for road testing shall automatically record and store a host of data for at least 90 second before any accident. The storage time shall not be less than 3 years.

Map Data

Autonomous driving technology is inseparable from accurate electronic mapping to ensure the safe operation of the vehicle. In this process, the autonomous driving system will inevitably collect real-time vehicle location, road information and other natural geographical elements, and these behaviors are likely to constitute the "mapping" behavior regulated by the "Surveying and Mapping Law of the PRC."



Article 27 of the Surveying and Mapping Law stipulates relevant qualifications for institutions engaging in surveying and mapping activities. If the intelligent driving vehicle enterprises carry out the production of navigation electronic map by themselves, they must obtain the qualification for surveying and mapping activities.

As for the storage of map data, there are more strict standards. Article 34 of the “Regulations on Map Administration” stipulates that, institutions engaging in internet map services shall locate their servers which store map data within the territory of the People’s Republic of China, and shall establish the management system as well as protection measures for the data security of internet maps. Article 2 of the Notice on Strengthening the Production, Test, Application and Management of Autopilot Maps stipulates that, without the approval of the administrative authorities of surveying, mapping and geoinformation at or above the provincial level, map data may not be provided to or shared with foreign organizations and individuals as well as wholly foreign-owned enterprises, Sino-foreign equity or contractual joint ventures registered in China, and persons beyond the prescribed scope shall not have access to map data in relevant technical tests or road tests.

In sum, China has strict requirements on the production and data storage of navigation electronic map, and relevant enterprises should pay special attention to this part of compliance issues when carrying out business.

Meteorological Data

As for the meteorological data involved in autonomous driving, article 8 of China’s “Meteorological Law” stipulates that, foreign organizations and individuals must obtain the approval of the competent meteorological department under the State Council in conjunction with relevant departments to engage in meteorological activities in the territory of the people’s Republic of China and other sea areas under the jurisdiction of the people’s Republic of China. It can be seen that the collection of meteorological data is a professional work, and applies a more strict access mechanism for foreign investment.



Germany



Regulatory overview

Transport authorities

Germany, home to several leading automotive companies, is a leader in autonomous transportation. Among the institutions leading the effort to welcome autonomous vehicles is the Federal Ministry of Transport and Digital Infrastructure (BMVI), a supreme federal authority of Germany. The Ministry, together with its subordinate authorities, carries out departmental tasks in the fields of mobility of persons, goods and data. This responsibility includes the federal transport infrastructure (federal trunk roads, railway networks, waterways and air traffic routes).

The highest state authorities in the field of transport are the Ministry of the Interior, Sport and Integration and the Ministry of Housing, Construction and Transport. In addition, there are several road traffic authorities that engage the Road Traffic Regulations (StVO), the Holiday Travel Ordinance and the Federal Emission Control Act. They are the:

- Municipalities belonging to the district (local road traffic authorities).
- District authorities and municipalities in their own right (lower road traffic authorities).
- Governments (higher road authorities).
- State Ministry of the Interior, for Sport and Integration (Supreme Road Administration).

By way of background, the Federal Motor Transport Authority (KBA) was established by law on August 4, 1951, as the federal authority for road traffic. It belongs to the division of the Federal Ministry of Transport and Digital Infrastructure and sees itself as a service provider for motor vehicles and their users. In Germany, the KBA is the only type approval authority. Type approvals confirm that the legal safety and environmental standards as they relate to transportation are fulfilled. In addition, there are other type approvals required via the European Economic Area (EEA) and ECE regulations. The KBA informs other contracting

states and national official monitoring organizations (sections 19 and 29 Road Traffic Licensing Regulations (StVZO)) of type approvals granted.

With the type approval, the authority confirms that the serially manufactured approved product meets legal standards. Type approvals stand for safe and environmentally friendly technology on the roads.

- Vehicle type approvals can be granted in accordance with national regulations (section 20 StVZO) or EC regulations (Directives 2002/24/EC, 2003/37/EC or 2007/46/EC).
- Component type approvals can be granted in accordance with national regulations (§§ 22 or 22a StVZO), EU regulations (EC directives and regulations, EU regulations) and UNECE regulations (ECE regulations).
- Type approvals for systems can be granted in accordance with EU regulations (EC directives and regulations, EU regulations) and UNECE regulations (ECE regulations).

In Germany, the Road Traffic Authority is the administrative authority, determined by state law in accordance with section 44 Road Traffic Regulations (StVO), responsible for monitoring and implementing the Road Traffic Regulations. The Road Transport Authority is not an independent organizational unit, but is part of the local municipal administration (city administration or, in municipalities with a smaller population, the district administration).

Finally, in Germany, the motor vehicle registration office (and the driving license authority) may be assigned to the office that also assumes the task of the road traffic authority, but this does not necessarily have to be the case.

Each of the aforementioned institutions plays a role in approving and regulating autonomous vehicle testing and deployment.



But how is Germany as a whole approaching this new age and the new prosperity that may come with it? On which path will the country in the heart of Europe move towards a new age? The principle, that modern mobility is a key to future prosperity has also led the federal government to place the task of promoting this prosperity at the center of political action. The Federal Ministry of Transport and Digital Infrastructure (BMVI) has therefore been given the important task of ensuring that key players from industry, research, associations, administration and politics work together with the aim of paving the way for solutions that are viable for a high tech and leading automotive country like Germany and the German society as a whole.

The coalition agreement for the current legislative period already provides for various measures to create modern, barrier-free, sustainable and affordable mobility. It is expected that the BMVI will therefore continue to advocate for the creation of optimal framework conditions for the introduction of automated and connected driving systems (ACD) into the regular operation of road traffic in the new legislative period.

For years, the BMVI has been working to make Germany fit for the future in terms of modern mobility. For example, since 2013 the federal ministry has established the Automated Driving Round Table (RTAF) as an advisory body. It facilitates a close exchange among actors from industry, science, associations and administration. The necessary know-how is bundled in such a way that a broad social consensus can be reached on all relevant aspects of ACD. The RTAF meets twice a year and has developed the necessary cornerstones for a successful introduction of ACD, which formed the basis for the federal government's "Strategy for automated and connected driving-remain the lead provider, become the lead market, initiate regular operation." (ACD strategy).

The ACD strategy was adopted by the German federal government in 2015. In order to ensure a fast and successful realization of the strategy, the objectives have been implemented with targeted measures in the fields of infrastructure, law, promotion of innovation, connectivity, cybersecurity and data protection, and social dialogue.

Unfortunately, however, it must be noted that the economy is still skeptical. And a general problem in this country is, that German politicians on all state levels and the German auto industry do not think far enough ahead. They fail to recognize the fact that the autonomous car is not only about driverless mobility, but also about an energy and traffic revolution. So far, the United States has understood this better than Germany and threatens to move ahead of Germany in this space. For example, in an effort to improve the safety of cars driving autonomously, chip manufacturer Qualcomm is calling for clear political guidelines for carmakers and suppliers. This involves the use of technologies so that vehicles from different manufacturers can communicate with each other. "The role of the regulatory authorities is central here," technology head Matthew Grob told the German Press Agency. "They have to announce by what date how many percent of autonomous cars must have this technology." In the same way, safety belts and airbags have also been made compulsory for all manufacturers.

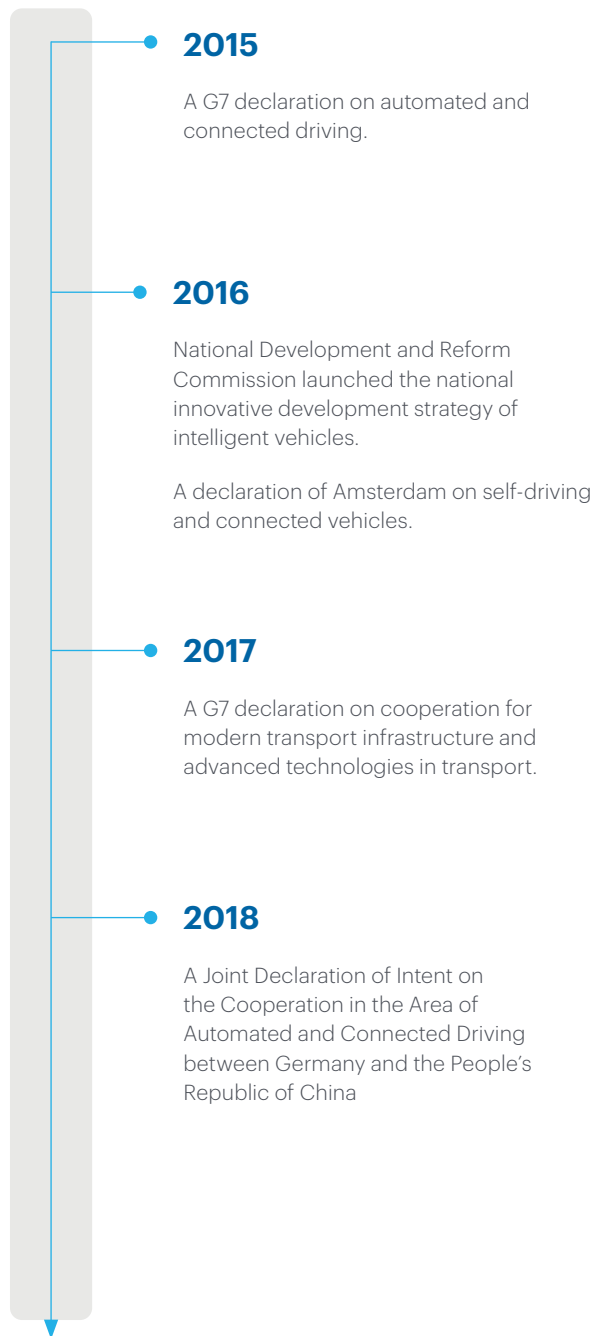
Although Germany thus has a national strategy for AVs and plans for using them ethically, the country's federal structure may threaten consistency at the country level. So far, the main results of the implementation of the strategy by the federal government have been:

- Adaptation of the national legal framework, in particular the amendment of the Road Transport Act.
- Adoption of an action plan to establish ethical rules for driving computers.
- Establishment and coordination of test fields for automated and connected driving in real traffic.
- Supporting the research and development of ACD solutions from basic to applied research.
- Active design of regulations and standards in committees at European and international level.

Through these measures, Germany has thus achieved an international pioneering role in creating the framework conditions for automated and connected driving (ACD), and these must be maintained and further expanded.



Automated driving is a cross-border issue, especially in Europe. On an international level, much has been done and actively led by Germany, most notably:



International law

In understanding the emergence of rules for autonomous vehicle deployment a brief overview is required. Road traffic makes it possible to get from one place to another quickly and comfortably. In principle, the road network is not limited to the national area, but enables cross-border traffic and, for this reason, naturally affects the interests of several sovereign states at the same time. Furthermore, vehicles are not only produced in the state in which they will later operate, rather the automotive industry is characterized by imports and exports on a global market. Therefore, it is not surprising that international agreements were concluded with the intention of creating uniform traffic and registration rules for motor vehicles in order to guarantee the safety of road traffic across national borders.

One of these agreements is the "Vienna Convention on Road Traffic" (WÜ) of 08.11.1968, which is an international treaty obliging the contracting parties to adopt uniform traffic and licensing rules. Compliance with these provisions is a prerequisite for admission to international traffic (cf. Art. 3 para. 3 WÜ).

But there are also numerous regulations at the European level that are intended to standardize the automotive sector in the individual member states of the European Union. For example, according to Art. 4 para. 2 of Directive 2007/46/EC, member states may only grant approval for vehicles, systems, components or separate technical units if they comply with the requirements of this directive. With regard to these approval requirements, Art. 35 (1) Directive 2007/46/EC refers inter alia to the UNECE regulations listed in Annex IV, Part II and declares them to be equivalent components of secondary community law. The abbreviation "ECE" is derived from the United Nations Economic Commission for Europe (UNECE).

On the basis of the Vehicle Parts Convention (ECE Regulations) (FTÜ), the contracting parties crafted ECE regulations for wheeled vehicles, equipment and parts that can be fitted to wheeled vehicles (cf. Art.1 para. 1 p.1 FTÜ) by means of an administrative committee to which all contracting parties belong, in accordance



SPOTLIGHT

Several of Germany's powerful states are also working on AVs. Some examples are:

- North Rhine Westphalia, which includes Cologne and Düsseldorf, has established a *Zukunftsnetz Mobilität* (future of mobility) network to support municipalities, many with the promotion of AVs among its tasks.
- Berlin and Brandenburg (the state surrounding the capital) are both analyzing the market for research and development work on AVs.
- Public transport providers in Berlin, Hamburg and Frankfurt, as well as the national railway company Deutsche Bahn AG, are testing autonomous buses in a range of settings, and there are more than 20 AV test sites nationwide. Some say that the highly devolved nature of government with more than 11,000 municipalities makes it difficult to set national standards and strategy.
- A 9-kilometer test track for testing automated and connected vehicles (TAVF) is currently being built in downtown Hamburg. Funded by the BMVI, the city's infrastructure is being upgraded to enable I2V (Infrastructure to Vehicle) and V2I (Vehicle to Infrastructure). This will enable tests to be carried out in real public road traffic.

with the procedural rules set out in Annex 1. This includes, for example, brake systems, steering systems or headlights. The contracting parties involved are the EU and, in addition to Germany, 46 other states. These ECE regulations, agreed based on the FTÜ, constitute a set of instruments designed to harmonize the international technical requirements for motor vehicles in order to remove barriers to trade in motor vehicles and their accessories. All contracting parties to the FTÜ may accept the individual provisions,

but are not obligated to do so. Where a contracting party has accepted a regulation, it shall be bound by international law, and shall undertake to register vehicles or parts approved, in accordance with the regulation in its own country.

For Germany, this recognition is standardized in section 21a Abs. 1 StVZO. In order to make the ECE regulations binding at a national level, they must be transposed into national law. In the case of countries of the EU, this is regularly done by approving the regulation in accordance with the requirements of Directive 2007/46/EC, which can be viewed in Annex IV, Part II, p. 2.

The ECE regulations now comprise more than 130 technical regulations which, in addition to systems and components for active and passive safety, also deal with environmentally relevant regulations. Both the EU and Germany have accepted most of these regulations.

These technical regulations have yet to be developed for autonomous and automated driving beyond assistance systems. However, this does not mean that such modern driving systems cannot be approved. Rather, they are permitted by way of exemptions, also for series production, and can then be offered on the market.

Road traffic law

As part of administrative law, traffic law is concerned with regulating traffic on public roads in Germany in such a way that no road user is harmed, endangered, obstructed or exasperated. It is not summarized in a single set of laws, but consists of several laws and ordinances, which are passed at the federal level and thus apply throughout Germany. Road traffic law in Germany is composed in particular of the following laws and ordinances:

The Road Traffic Act (StVG) is overarching: it contains rules on penalties and fines and lays down the basis for driving licenses and the registration of vehicles. Otherwise, it authorizes the Federal Ministry of Transport and Digital Infrastructure (BMVI) to implement these general provisions more precisely by means of ordinances.



The Road Traffic Ordinance (StVO) is probably the most familiar aspect of traffic law and made up the majority of driving lessons for German students. In short, it includes all the traffic rules that must be observed on German roads.

In addition to the StVO, The Road Traffic Licensing Regulations (StVZO) define the conditions under which motor vehicles and trailers can be registered for road traffic. It sets out in detail how these vehicles must be constructed and how they may be operated. The StVZO is to be gradually replaced by the Vehicle Registration Ordinance (FZV). Up until now, the FZV has regulated precisely how the approval procedure should look, under which circumstances license plates are awarded, and which insurance coverage vehicles must have.

Finally, the driving license regulation (FeV) prescribes the conditions an individual must fulfill in order to obtain a driving license, and the circumstances under which this license may be withdrawn.

As it relates to regulations that address autonomous vehicles specifically, there are currently different regulations in the individual US states and also in the individual EU member states; thus also for Germany.

At the international level, there are several agreements that provide the legal framework for national road transport legislation. One of the most important is the aforementioned Vienna Convention on Road Traffic of 1968. Automated systems were unknown in 1968 and therefore not regulated. Regulations at that time were based on a vehicle controlled by a human driver. Since the last change of the treaty in March 2016, automated systems have been allowed. However, fully autonomous (level 5) driving is not yet possible, as the agreement still provides for a driver.

If we now take a look at the German legal situation, it becomes apparent that according to section 1a of the Road Traffic Act, there are no legal restrictions against highly and fully automated driving – at least for level 3 (highly automated driving) and 4 (fully automated driving). However, the experts cannot achieve an unequivocal result with regard to the specific obligations, as laid out in section 1b StVG. This does not apply to fully autonomous driving (level 5), which is why the legal experts assume that it is “still fundamentally

inadmissible.” The absence of the possibility that a person in the vehicle could, if necessary, take over the control of the vehicle is not provided for in the text of the law. As such, level 5 autonomous driving is therefore not yet possible under German law either and initially requires further legislative steps.

In fact, the latest implemented right to enable levels 3 and 4 (except driverless/level 5 vehicles) is already in force. Sections 1a and b StVG regulate the interaction between the vehicle with the highly or fully automated driving function and the driver. The new law provides for the use and concept of highly and fully automated driving functions.

But with all these legal provisions and legal foundations presented – how can autonomous driving now be implemented in Germany in concrete terms? In summary, the following can be stated:

In Germany, vehicles with a highly automated or fully automated systems may be used in traffic in such a way that the driver can hand over the vehicle control to the system in certain situations. The system takes over the longitudinal and lateral guidance of the vehicle as well as acceleration and deceleration for defined applications, or for a limited time period. The driver no longer has to monitor the system permanently. Oftentimes, the system alerts the driver visually and acoustically when the vehicle needs to be checked again manually.

The operation of vehicles by means of highly and fully automated driving function systems is only permitted within the framework of normal use, whereby the intended purpose depends on the design. If an automated driving function is only intended for use on motorways, the system must not be used for traffic on other roads. The binding system description of the vehicle by the driver manufacturer must provide the driver with unmistakable information on the scope of the intended use.

During operation of a highly or fully automated driving system, the driver is allowed to turn away from the traffic situation. Within the scope of the mandatory system description, the driver may take his hands off the steering wheel, look away from the road and carry out other activities, such as processing e-mails in the



infotainment system. As mentioned above, the driver no longer has to monitor the system permanently. However, he must remain vigilant. The driver is obliged to resume the vehicle control immediately if he recognizes or should recognize due to obvious circumstances that the conditions for an intended use of the highly or fully automated driving functions no longer exist. The driver must remain so perceptive that he can grasp the situations regulated by law and then resume control of the vehicle.

However, this shows once again that the new law does not regulate fully autonomous driving where there are only passengers (i.e., level 5). There is still a legal need for regulatory action at national and international levels, and a possible need for technological development, as it relates to level 5 autonomy.

Overall, the German federal government welcomes further developments in the field of autonomous driving. Its aim is to strengthen the German economic position in this sector. In its “Strategy for Automated and Connected Driving,” which was formulated in 2015, Germany has set the goal of ensuring that Germany remains the “lead supplier for automated and connected vehicles” and becomes the “lead market” for this new technology. The introduction of autonomous vehicles into public road traffic is to be facilitated in particular, by adapting the legal situation.

In 2016, the federal government set up an ethics committee to be able to find answers to the full range of questions related to autonomous driving, especially to deal with legal and ethical issues. The panel consisted of 14 scientists and experts. In June 2017, the Ethics Committee adopted a final report with a total of 20 ethical rules. Among other things, it was stated here that the protection of man always has priority. The Ethics Committee has also rightly made high demands when it comes to data protection. These are being used today in the development of automated and autonomous systems. In total, three clear principles apply: transparency, self-determination and data security.

At present, as previously mentioned, high and fully automated driving in the sense of levels 3 and 4 is largely permissible in Germany. And although the COVID-19 pandemic is currently pushing many political issues to the background, autonomous driving is being driven forward in Germany:

In November 2020, the BMVI under Federal Minister Andreas Scheuer presented a draft bill for the law on autonomous driving, which will henceforth create a legal framework at Level 4 and possibly also Level 5. The aim is to pass this law before the end of the current legislative period in summer 2021.

Among other things, the law is to newly regulate the following issues:

- Technical requirements for the construction, condition and equipment of motor vehicles with autonomous driving functions;
- Testing and procedures for the granting of an operating permit for motor vehicles with autonomous driving functions by the Federal Motor Transport Authority;
- Regulations relating to the obligations of persons involved in the operation of motor vehicles with autonomous driving functions;
- Regulations relating to data processing during the operation of motor vehicles with autonomous driving functions;
- Enabling the (subsequent) activation of automated and autonomous driving functions of already type-approved motor vehicles (“dormant functions”); and
- Furthermore, adapting and creating uniform regulations to enable the testing of automated and autonomous motor vehicles.



If the legislature acts quickly and introduces a manageable set of regulations, Germany will have a real opportunity to take the lead in the industry and help shape the global mobility of the future.

The importance that politicians now generally attach to this topic for the future viability of Germany as a business location can be seen clearly in the following statements by the responsible government representatives:



Angela Merkel
Chancellor of Germany

Insists that we should not lose sight of the social market economy during digitization. “Prosperity for all that must also be the melody of the future in the age of digitalization.”



Andreas Scheuer
Federal Minister of Transport

“We are now bringing autonomous driving onto the road as well. At the moment we are working on a law to allow autonomous shuttles.” Independent driving, which Scheuer sees as a great opportunity for road safety, is already being tested. “This will soon enable us to avoid thousands of accidents and make ‘Vision Zero’ tangible.”



Peter Altmaier
Federal Minister for Economic Affairs and Energy

Pleaded for a merger of European companies in artificial intelligence—a kind of “Airbus of the AI.” A “single European company—no matter how large it may be—will not be able to compete alone against the big American players,” Altmaier said, adding that the idea is the most ambitious industrial policy project “that we have initiated in recent decades.”



Driverless vehicle testing and deployment

With its strong automotive industry, Germany is naturally also a sought-after testing ground for autonomous vehicles. With the speed limit-free autobahn, high-speed driving can also be tested here without any problems.

As it relates specifically to the legal framework for the testing of autonomous vehicles in Germany, vehicles may only be operated on public roads according to section 3 Abs.1 S.1 FZV (*Fahrzeugzulassungsverordnung*) and only if they are registered. According to the Vienna Convention (WÜ), every vehicle must have a driver (Art. 8 para. 1 (WÜ) who must be able to intervene on request. From a liability perspective, the use of a so-called safety driver in testing vehicles and vehicle systems makes sense and is common practice. Test drivers must possess a valid driving license otherwise, no additional training is necessary, but possible and useful.

The approval of prototypes for testing on public roads by means of a special permit is governed by sections 19 ff. of the German Road Traffic Act. StVZO. The granting of permits must be obtained from the responsible Langratsamt and is based on section 20 StVZO for type approval and section 21 StVZO for individual approval. Until now, up to level 3 is possible for the individual approval of test vehicles.

The vehicle is tested for its suitability and safety for public road traffic within the framework of the approval procedure (i.e., it is checked whether the vehicle, its design or its equipment meets the construction and operating requirements of section 30 StVZO). With regard to safety, the focus is on whether, based on general life experience or scientific findings, it is sufficiently likely that public road traffic and other road users may be endangered.

If the requirements of sections 30-62 StVZO are fulfilled, the administrative authority grants approval and the vehicle is registered as a test vehicle. If the vehicle does not correspond to the regulations, an exception permission can be given over section 70

StVZO by the highest national authority under certain conditions. The companies may test these on the intended test tracks during a possible limited time-period. In general, all test vehicles must be tested on the designated test tracks (e.g., A9 Munich-Nuremberg).

Permission is also required for testing on the private premises, provided that these are accessible to everyone.

There are no special insurance requirements for autonomous vehicles which go beyond the motor vehicle liability insurance prescribed in section 4 PflVG (*Pflichtversicherungsgesetz*). However, it might be useful for the manufacturer to insure the test vehicle comprehensively in order to avoid possible liability issues, since the strong connectivity can also lead to completely new risks (e.g., cyber-attacks).

There are a few safety requirements that are important to note. As a minimum, requirement for functional safety, hardware and software systems must separate vehicle functions from infotainment, telematics and navigation applications. The control systems must contain sufficient redundancy. For example, safe holding must be ensured even in the event of a failure of the main control system. Suitable protection against external (cyber) attacks must be provided, as well as against manipulation of security-relevant elements.

At every stage of development, the vehicle must navigate at least as safely as if a human being controlled it. However, the possibilities of automated and autonomous driving must not be used to limit the autonomy of the road user elsewhere. An example could be a general speed limit that is "enforced" by the vehicle driving in strict compliance with the regulations. Data collection must not be used to establish new restrictions and controls throughout the country (e.g., for recording driving times). Technological development as such will make traffic safer and reduce risks such as those posed by overtired drivers.

Finally, in regard to autonomous trucking, while the Hamburg Truck Pilot Project of Hamburger Hafen & Logistik AG and MAN Truck & Bus, for example, is currently underway to test the automated connection of truck columns and fully automated approach on the A7



motorway and independent loading and unloading in container terminals, no more specific legal regulations have yet been passed for this area of automation.

As it relates to AV deployment, in principle, there are no provisions that restrict consumers from riding in autonomous vehicles. The operators, however, must observe a few points. Experience with automated shuttles was gathered in a series of pilot tests over the last few years. The experiments have so far taken place in “protected areas” both in large cities and in small towns.

All pilot projects must be applied for on a case-by-case basis. As soon as the automated vehicle (shuttle) is to be driven on public roads, it needs, in addition to the obligatory liability insurance, an “approval on the basis of an exemption permit” in accordance with section 70 of the Road Traffic Licensing Regulations (StVZO).

As soon as revenues are generated from the trial operation, an operating permit in accordance with the Passenger Transport Act is required.

Finally, in regard to autonomous taxi like services, an operating permit in accordance with the Passenger Transport Act is required, just as it is for a normal bus or taxi company.

Liability

A significant question facing automated and autonomous driving is that of liability in the event of an accident. In Germany and in some other countries, the legal situation is clear because there is a three-pillar model consisting of driver, owner and manufacturer liability. The driver is responsible for the driving task and must always monitor the vehicle and intervene in the event of an emergency, for example in the case of semi-automated driving functions. If he fails to comply with his duties of care and thereby causes an accident, he shall be liable, in addition to the owner, for the damage thereby incurred. Additionally, the manufacturer may be liable under product and producer liability for damage caused by a product defect. This combination of driver, owner and manufacturer liability offers a balanced distribution of risk, ensures victim protection, and has proven itself in practice. The liability model is also a good basis for new systems and the next steps in automated driving.

Politicians were also concerned with the issue of liability in connection with autonomous driving from the outset:



Alexander Dobrindt

German politician of the Christian Social Union of Bavaria. Former Federal Minister of Transport and Digital Infrastructure in the government of Chancellor Angela Merkel.

When CSU politician Alexander Dobrindt was still Transport Minister, he had a simple solution to this complex problem: In the event of an accident with autonomous cars, he said, “the moment the computer takes over, liability passes to the manufacturer.”



Given that car manufacturers could be held responsible, the car industry would do its best to defend itself against this. In sum, potentially liable are the driver, the owner, the car manufacturer and the producers of the individual vehicle parts.

The insurance industry, which has been dealing with liability issues for robotic cars for months, has a different view. According to insurers, the owner would have to be liable even if he did not make a mistake. This corresponds to the current legal regulation. However, the insurance company may seek recourse from the manufacturer if the latter is liable for a failure of the driving system.

In the case of semi-autonomous vehicles, the driver is in any event an integral part of the liability regime. According to German law, he must be guilty of intent, negligence, or any other misconduct for liability.

As of late, discussions have taken place about updating the liability regime to cover autonomous vehicles more specifically, however, the previous liability regime of German civil law is regarded as sufficient.

Data privacy and security

At a time when more and more citizens are concerned about the data collection frenzy of companies and data is even described as the “oil of modern times,” the security of the data generated during autonomous driving is naturally of great importance.

The data collected by autonomous vehicles (location data, sensor data, etc.) is considered “personal data” as defined by the EU and Federal Data Protection Act (now BDSG) and as of May 2018, the EU Data Protection Regulation (GDPR). Such data can be traced back to the owner, driver or passenger, and identified as information about personal or actual circumstances of a person. Most of the data collected by modern cars is assigned to the vehicle identification number (VIN).

The collection, storage and use of personal data is permitted under data protection law if there is a justification for doing so or if the data subject has given his effective consent. Limiting requirements

(data economy, scoring in accordance with section 31 BDSG 2018) must be observed for both mass collection and automated processing of personal data. Further restrictions apply to particularly sensitive data (e.g., information on health or ethnic origin, cf. Art. 9 EU-DSGVO). More than four decades ago, the Federal Constitutional Court put a stop to the creation of total personality profiles (profiling).

The DSGVO proposes two major documentation concepts, which must be presented at all costs, if only to prove legal conformity in the event of possible complaints:

- **The list of processing activities for customer data (formerly: procedure directory).** This list should be the central document in the company. It covers all typical processing steps (e.g., e-mail marketing, CRM, customer analysis, etc.) but also your payroll accounting or merchandise management system and the like, and helps you to comply with your obligations.
- **Documentation of processing security (technical and organizational measures).** Customer and user data can be sensitive, which is why the legislature stipulates here that they must be well secured. It must document extensively which measures are in place to ensure that the data is safe in the enterprise and remain there.

Before collecting the data, the organization should make sure that all data is necessary and proportionate to the purpose for which it was collected.

The passing on or even the sale of user and customer data is not possible without further consideration of the following scenarios:

- Transfer/sale in the context of a complete company sale (since the responsible person does not change, there are no issues here).
- Disclosure/sale within the framework of an asset deal (consent of the affected parties may be necessary, further information can be found).
- Transfer of data within the scope of order processing (AV contract is necessary).



- Passing on data in third countries (e.g., Google Analytics, guarantees must be available).
- Transfer/sale for the purpose of address trading (as a rule, new consent necessary, insofar as not done in the collection of data).

Excluded from this are already publicly available data.

As is already the case under previous legislation, there is a right to information on the processing of personal data. Upon request, companies must provide information on data processing in a precise, transparent, comprehensible and easily accessible form in clear and simple language. This includes, for example, the storage period, the purpose for which the data are processed, which categories of personal data are processed, information on the origin of the data and possible recipients of the data.

A new feature is the right to a copy of the data. You can specifically request information about which personal data are processed by the responsible person (e.g., surname, first name, address, date of birth, profession, medical findings) and receive this in the form of a copy provided by the company.

Under certain circumstances, companies must delete data. This is the case, for example, when the data are processed unlawfully or are no longer needed for the original purpose for which they were collected.

Individuals may also request, under certain circumstances, that your data not be further processed. The data is therefore not deleted, but the data processor must block the data and cannot continue to use it as usual.

In an effort to address data security, the Act to Increase the Security of Information Technology Systems (IT Security Act), came into force in July 2015. Through this Act, the federal government intends to make Germany's IT systems and digital infrastructures the most secure in the world.

In addition, The Federal Office for Information Security (BSI), which is responsible for security in information technology in Germany, has numerous references to the correct protection of data on its homepage.

The IT Security Act requires that operators of critical infrastructures in certain areas will have to comply with a minimum standard of IT security and report significant



IT security incidents to the BSI. For the information technology and telecommunications sector, which is also highly relevant for automated and autonomous driving, the Ordinance on the Determination of Critical Infrastructures under the BSI Act (BSI-KritisV) already defines the scope of application.

The transport and traffic sectors also fall within the scope of the IT Security Act. The first regulation amending the KRITIS Regulation of 21.6.2017 (BGBl. I, p. 1903) determines exactly which annexes are included. Part 3, plant categories and threshold values, point 1.4, lists the traffic control and guidance system for the federal motorway network, as well as the traffic control and guidance system for municipal road traffic for cities with more than 500,000 inhabitants.

Even if this regulation is not yet directly aimed at (highly) automated or autonomous driving, it is already clear that a corresponding IT infrastructure will fall under the increased requirements of the IT Security Act.

Telecommunications and 5G

One of the most important basic requirements for automated and connected driving is telecommunications connectivity. Germany still has a way to go before it has a nationwide 5G network. Meanwhile, the rollout of 5G is progressing faster than expected. Telekom now has 45,000 antennas in its network and Vodafone 10,000. According to Telekom, it wants to have around 80% of the population covered by 5G by the end of 2021. The expansion is expected to be completed to around 99% in 2025.

The auction of the 5G frequencies in the 3.6 gigahertz range by the Federal Network Agency began on March 19, 2019. Some 2 GHz frequencies are also earmarked for 5G use, but will only be available between 2020 and 2025. Right from the start, 60 5G antennas have been transmitting in more than 20 cities and communities. At present, about 150 cities and communities are connected and by end of the year Germany expects to operate around 300. These include Cologne, Dusseldorf, Hamburg, Dortmund and Munich.

It is unknown if the government has taken a position between using 5G networks for cellular vehicle-to-everything communication or dedicated short-range communication. DSRC technology is already being used in Germany for the digital truck tolling system. From a technical point of view, this communication is desirable, but not necessary for the current sensor acquisition of the data by operating level 3 vehicles.

Notably, spectrum is unregulated in Germany, unlike in Great Britain or France.

COVID-19 impact

With the start of the COVID-19 pandemic and since then, other topics, especially COVID-19 related matters dominated politics and pushed other topics, such as transport politics and autonomous driving, to the background. As a consequence, there were no changes or significant progress in relation to transportation politics. Fortunately, Germany was already an advanced and progressive country with regards to autonomous driving and already enacted legislation.

Since the beginning of the pandemic, AV companies in Germany were able to survive the pandemic and the related economic tumult. However, many struggled with the decrease in sales and had to adjust production due to COVID-19 regulations such as reduce the number of employees in factories or send employees on short time/reduced working hours. This ultimately led to a reduction in production as well as a slowdown in research and development regarding autonomous driving. However, after the first lockdown, production and sales quickly recovered, the projections are positive and despite the negative effects of COVID-19 earlier this year, autonomous driving efforts continued; the test field for autonomous driving between Karlsruhe and Heilbronn for example was expanded and equipped with sensors despite the difficulties caused by COVID-19.



Hungary



Regulatory overview

It is generally understood that Hungary could be an early location for AV as it has developed a telecom network with high quality coverage for most of the country and also has a developed motorway system. Supporting AI and AV and other groundbreaking technologies and automotive production is at the top of the Hungarian Government's agenda. Importantly, the Minister for Innovation and Technology has an automotive engineering background.

The Minister of Technology and Innovation introduced the Artificial Intelligence Strategy of Hungary in September 2020 for the next 10 years. The strategy envisions the creation of the supportive development environment for research and infrastructure required for autonomous driving technologies. The policy focuses on finishing the ZalaZone test track, but also mentions the development of an agricultural test environment for autonomous agricultural works and the development of smart cities. The policy also covers the analysis and support of development of vehicle-to-vehicle communications environment. The Government committed to create a number of roads implemented with the necessary autonomous technologies by 2025.⁶⁸

In July 2017 the State Secretary for Education confirmed that a vehicle test site covering an area of 250 ha (617 acre) for driverless vehicle development purposes will be built in Zalaegerszeg, Hungary. The State Secretary emphasised that the construction will have a positive impact on education, apprenticeships, research and development, and innovation.

In May 2019 – after the transmission of the first stage of the Zalaegerszeg test field – the Prime Minister of Hungary, Viktor Orbán, said that “the future has started around us, namely digital economy, and this investment is the first ticket we bought into this future.” He also said that according to his expectations, a regional professional center shall be established on the testfield of Zalaegerszeg, whose agglomeration could cover not only the whole region, but Europe as well.



Viktor Orbán
Prime Minister of Hungary

“The future has started around us, namely digital economy, and this investment is the first ticket we bought into this future.”

⁶⁸ The artificial intelligence strategy of Hungary <https://digitalisjoletprogram.hu/files/6f/3b/6f3b96c7604fd36e436a96a3a01e0b05.pdf> (available only in Hungarian)



Based on news reports as of November 2020, the construction of the test field is planned to be finished at the end of 2021. Based on new arrangements, testing will be allowed on a new expressway built near the test field. Developers will have a chance to close one side of the expressway from the public for testing. Full AV communication systems will be installed on this section of the expressway. Developers plan to test the effects of AVs' changing communication systems when crossing borders based on the tripartite agreement mentioned in Regulatory Agencies section 3.⁶⁹

Liability

Autonomous vehicles are in a testing phase - for now the same liability regime applies as to other vehicles, i.e. the (human) driver / the operator of the vehicle will have liability. No AV-specific legislation published yet.

Data privacy and security

Privacy

With respect to data privacy in Hungary, the provisions of the General Data Protection Regulation (Regulation (EU) 2016/679) (hereinafter referred to as the: **"GDPR"**) are directly applicable in Hungary. However, there are a number of areas where the GDPR permits Member States to create their own legislation. In the course of implementing the provisions of the GDPR, the Hungarian Parliament adopted the amendment of Act CXII of 2011 on the Right of Informational Self-Determination and on Freedom of Information (hereinafter referred to as the: **"Hungarian Information Act"**) in 2018. Both of the provisions of GDPR and the Hungarian Information Act shall be taken into account in case there is a data processing activity in connection with autonomous vehicles. All data collected by autonomous vehicles is considered "personal data" as these data are information relating to an identified or identifiable natural person (e.g. location data).

Processing means any operation or set of operations which is performed on personal data or on sets of personal data, whether or not by automated means, such as collection, recording, organization, structuring, storage, adaptation or alteration, retrieval, consultation, use, disclosure by transmission, dissemination or otherwise making available, alignment or combination, restriction, erasure or destruction. Processing of personal data is permitted only if there is a valid legal ground to support such processing.

According to the rules pertaining to autonomous vehicles for development purposes,⁷⁰ such vehicles must be equipped with a data recording device, which shall collect the following data: (i) name of the test driver; (ii) information on whether the vehicle operates in a manual or in an automatic mode; (iii) speed of the vehicle; (iv) GPS coordinates; (v) operation of the lighting and light signaling device; (vi) usage of the audible warning device.⁷¹

Data subjects are entitled to have the right of access, which means that they have the right to request the data controller to make available their personal data and information concerning the processing thereof, as it is specified by the GDPR and the Hungarian Information Act. Data controllers must implement appropriate technical and organizational measures to ensure that data subjects are able to exercise their rights.

Additionally, under the GDPR, personal data shall be stored no longer than it is necessary for the purposes for which such personal data are processed. The rules pertaining to autonomous vehicles for development purposes specify that after the end of the test, the data specified above in question 2 have to be stored securely for 72 hours. Upon request, the data (including video and audio recordings) shall be sent to the competent authorities. In the case of a traffic accident, the data collected 1 hour before and 1 minute after the accident must be stored for 3 years.⁷²

69 <https://www.vg.hu/vallalatok/kozlekedes/meg-egy-ev-es-teljesen-kesz-a-zalazone-2-3379015/> (available only in Hungarian)

70 KöHÉM Decree No. 6/1990 (IV 12) on the general conditions of the vehicle registration and on operating road vehicles and KöHÉM Decree No. 5/1990 (IV 12) on the on roadworthiness tests of road vehicles

71 Annex 17 of KöHÉM Decree No. 6/1990 (IV 12) on the general conditions of the vehicle registration and on operating road vehicles

72 Annex 17 of KöHÉM Decree No. 6/1990 (IV 12) on the general conditions of the vehicle registration and on operating road vehicles



Finally, both the GDPR and the Hungarian Information Act data subjects (consumers) have the following rights: (i) right to be informed; (ii) right of access; (iii) right to rectification; (iv) right to restriction of processing; (v) right to erasure ('right to be forgotten'); (vi) right to data portability and (vii) right to object.

Security

On an EU level, cybersecurity is governed by the NIS Directive.⁷³

In Hungary, the Critical Infrastructure Act⁷⁴ regulates the minimum requirements that operators of critical infrastructures of certain areas must comply with. According to Schedule 1 of the Critical Infrastructure Act, transport and traffic sectors fall within its scope.

The main guidance issued by the Hungarian Government aiming cybersecurity are the following:

- (i) Strategy regarding the safety of network and information systems;
- (ii) Governmental Ruling No. 1163/2020. (IV. 21.) (II 21) on the National Security Strategy of Hungary; and
- (iii) Governmental Ruling No. 1139/2013 (III 21) on the National Cybersecurity Strategy of Hungary (together as "**Governmental Rulings**").

According to the Governmental Rulings, the primary obligation is (i) the regular assessment and prioritization of the actually occurring or potential threats and risks arising in connection with cybersecurity; (ii) strengthening the governmental coordination; and (iii) enhancing the social awareness and exploiting international cooperation opportunities. Besides strengthening the national critical information infrastructure, Hungary – with its allies and its EU-partners – seeks to strengthen the security of the information systems and to participate in creating the

appropriate level of cybersecurity. The Governmental Rulings also contain the creation of the leading system of the cybersecurity strategy.

Telecommunications and 5G

The Government launched its so-called Digital Wellbeing Program (DWP) 2.0⁷⁵ in 2017, which declares its aim – among others – to lead the introduction and implementation of 5G in Europe. The DWP initiated the forming of 5G Coalition, which is a joint committee, the presidency of which is comprised of the minister of the Ministry for Innovation and Technology, scientists, representatives of commerce chambers and high-level executives of relevant industry leading companies. The main agenda of the Coalition includes providing strategic and development propositions, identifying areas where 5G may be implemented, contributing to technical and infrastructural demands of testing facilities, forming international relations and identifying available tenders of EU resources.

The representatives of the Ministry for Innovation and Technology, the Digital Wellbeing Program and 5G Coalition introduced a proposal for the 5G Strategy of Hungary in March, 2019. Deputy State Secretary for Info Communications emphasized the relevance of 5G as one of the most important technological advancements of our days and mentioned the use-case of AVs. In June, 2019 on the plenary session of the 5G Coalition the Minister of the Ministry for Innovation and Technology stated that the Hungarian State shall cooperate and participate in the infrastructural implementation of 5G with the market participants. The Minister expected that the proposal would be accepted in July, 2019 thereafter the Government shall rapidly enact legislation on the technical and operational specifics of network.

In July 2019 – to fulfil the obligation stipulated in Directive (EU) 2018/1972⁷⁶ regarding 5G -, The National Media and

⁷³ Directive (EU) 2016/1148 of the European Parliament and of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union

⁷⁴ CLXVI of 2012 on the identification, designation and protection of the critical infrastructures

⁷⁵ <https://digitalisjoletprogram.hu> (available only in Hungarian)

⁷⁶ Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code (Recast)Text with EEA relevance. (europa.eu)



Infocommunications Authority organized an auction for 5G frequencies in the 700 MHz, 2100 MHz, 2600 MHz and 3600 MHz frequency bands. The bidding companies purchased frequency usage rights for 15 years in 3 frequency bands for a total of HUF 128,490,000.001. The final results were published on 1 April 2020.⁷⁷

Spectrum is unregulated in Hungary and no regulation appears to have been enacted yet concerning vehicle-to-everything communication. However, DSRC technology is already being used in Hungary in connection with the regulation of the collection of road tolls.⁷⁸ The regulation allows the use of 3 systems: (i) GPS, GNSS; (ii) CN; and (iii) DSRC.⁷⁹ We have no information on the Government's plans regarding opening up the band to alternative uses.

COVID-19 impact

No specific measures for AVs were introduced in light of COVID-19. The Hungarian Parliament and Government have been generally focused on the prevention and combatting of the pandemic, therefore legislative aims might have temporarily shifted from focusing on new technologies, such as AVs. Interestingly, the Hungarian Government indicated that during the pandemic public transportation should be avoided if possible to reduce the spread of the virus and introduced measures such as free parking in cities to enable more people to commute by car instead of public transport. Finally, mainstream developers have been able to continuously receive funding despite the economic difficulties.⁸³

77 https://nmhh.hu/cikk/211267/UF191801972019_szamu_hatarozat_arveresi_eljaras_eredmenyenek_megallapitasa_az_5G_bevezeteset_tamogato_es_tovabbi_vezetek_nelkuli_szelessavu_szolgaltatasokhoz_kapcsolodo_frekvenciahasznalati_jogosultsagok_targyaban

78 GKM Decree No. 47/2007. (IV. 17.) on the national electronic road toll collection systems

79 Section 3(1) point c) of GKM Decree No. 47/2007. (IV. 17.) on the national electronic road toll collection systems

80 <https://aimotive.com/-/22446>

81 https://www.napi.hu/magyar_vallalatok/onvezeto-auto-allami-tamogatas-varga-mihaly-munka-allas-jarvany.708529.html (available only in Hungarian)

82 <https://www.origo.hu/gazdasag/20200608-az-onvezeto-autozashoz-kapcsolodo-fejleszt-test-vegez-a-bosch-es-a-budapesti-muszaki-egyetem.html> (available only in Hungarian)

83 <https://aimotive.com/-/22446>

SPOTLIGHT

Which companies are particularly active in the autonomous vehicle space in Hungary?

- The ZalaZone test track features Ericsson's 5G technology installed on an existing radio tower owned by Magyar Telekom.
- In June 2019, Almotive Informatikai Kft. gained almost €1,2M as a non-refundable state aid from the National Research, Development and Innovation Fund. The company will use this amount for developing a particular chip design, which makes those neural networks faster, which are the bases of the artificial intelligences. The general objective of the company is to provide hardware needs for the driving-automatization systems. As of June 2020, based on reports published by Almotive, Almotive became the most funded automated driving software supplier in Europe.⁸⁰ The Hungarian Government also subsidized the company in 2020 with approximately EUR18m.⁸¹
- At the moment, Knorr-Bremse R&D base is improving such vans which have level 4 autonomy so that the driver can get out from the vehicle and not obliged to intervene anytime, anymore.
- Robert Bosch Kft., together with the Budapest University of Technology and Economics, received state aid of approximately EUR 5m for joint research in the field of autonomous vehicles.⁸²



Poland



Regulatory landscape

The Polish government recognizes the importance and benefits of road transport automation.

At an international conference organized by the Polish Motor Transport Institute in September 2017, the government announced it would start **cooperation at the central government level** in the field of road traffic automation. To achieve effective coordination of activities, they underlined the need to establish the Polish Competence Center in the field of transport automation.

At the same time, the Director of the Motor Transport Institute outlined **a plan to establish a National Contact Point** for manufacturers of vehicles and components, technology companies, local government, science institutions and other organizations interested in developing and rolling out connected and automated driving (CAD) systems and stated that the Institute would “provide expert and substantive support for partners.”⁸⁴

The Act on Electromobility and Alternative Fuels, effective January 2018, marked an important step forward. **The Act amended the Road Traffic Act to allow autonomous vehicle testing.** It introduced to the Polish legal system a definition of “autonomous vehicle” as a motor vehicle equipped with systems controlling the vehicle’s movement and enabling movement without interference by the driver, who can take control of the vehicle at any time.

In September 2019, the government adopted the **“Strategy for Sustainable Development in Transport until 2030”** emphasizing the need to strive to have autonomous vehicles on the roads “in the foreseeable future.” The strategy underlines the need to provide support for the effective functioning and competitiveness of the domestic automotive market

and the IT market, through setting up the National CAD Contact Point and defining the rules for testing and introducing autonomous vehicles for use in a way that ensures safety and social acceptance for such technology.⁸⁵

The Ministry of Infrastructure is undertaking the most important works aimed at preparing for autonomous road transport. This includes the project **“Poland’s road to road transport automation” (AV-PL-ROAD)** which is scheduled to last three years and should result in setting up a green book of autonomous vehicles, creating CAD contact point and a road map for the introduction of autonomous vehicles in Poland. The Ministry of Digitisation, in turn, coordinated work on the **Internet of Things (IoT) working group**, which also included applications in the area of autonomous transport.

Recent years have also seen initiatives at the local level. In July 2019, the Mayor of **Rzeszów** signed a letter of intent with companies responsible for network infrastructure, telecommunications and cybersecurity regarding a partnership aimed at research and implementation of 5G technology. It will support the introduction of autonomous buses in the city, which will initially run on the line connecting two railway stations, and ultimately on the route from the city center to the airport.

In September 2019, tests of automated electric minibuses were carried out in **Gdańsk** with a view to public passenger transport, in particular “first and last mile” connections, all under the aegis of the Sohjoa Baltic project.

⁸⁴ See <https://www.its.waw.pl/10178,en,The-government-will-support-the-development-of-autonomous-vehicles-in-Poland.html>.

⁸⁵ The strategy is available at: <https://www.gov.pl/web/infrastruktura/projekt-strategii-zrownowazonego-rozwoju-transportu-do-2030-roku2> (only in Polish).



Also in September 2019, **tests of autonomous passenger vehicles** were to take place on a stretch of the A4 **motorway between Kraków and Tarnów**. However, the event was later postponed.

Other groundwork preparations for autonomous vehicles have taken place in the city of Jaworzno. The city has mapped streets and their surroundings to create a **3D map to support navigation for autonomous vehicles**. The city also intends to develop legal, technical and organizational guidelines to ensure safety on the roads where autonomous vehicles will drive.

In January 2020, autonomous trams were tested in Kraków. The test was conducted in cooperation with Cracow University of Technology - Institute of Rail Vehicles, MPK Kraków and companies Newag, Cybid and Medcom. The aim of the project is to introduce autonomous trams to Kraków.⁸⁶

In February 2020, the **Autonomous Vehicles Working Group** was established in Gdańsk. The inaugural meeting was attended by representatives of the Governor of the region, businesses interested in autonomous vehicles, clusters and scientists. The task force is seeking to create the conditions for the development and sale of services and products related to autonomous vehicles.

The **Ministry of Infrastructure** plays a key role in the automotive sector in Poland, as it is the central government body responsible for formulating transport policy.

Other important authorities include the **Director of the Transport Technical Supervision** (Polish: Dyrektor Transportowego Dozoru Technicznego) – a type approval authority in Poland and traffic management authorities, namely:

- **General Director for National Roads and Motorways (GDDKiA)** (manages national roads),
- **Voivodeship marshals** (Polish: marszałek województwa) (manage regional roads),

- **District CEOs** (Polish: starosta) (manage district and municipal roads), and
- **Mayors** (manage roads in cities with powiat rights, excl. highways and expressways).

District CEOs are also responsible for registration of vehicles.

Driverless vehicle testing and deployment

Following the amendment of the Road Traffic Act in 2018, **companies can test autonomous vehicles on public roads in Poland if safety requirements are met and they have a permit from the relevant traffic management authority**.

The organizer of autonomous vehicle testing must submit a written application to the traffic authority responsible for management of the road on which the testing is going to take place. The application should state at least:

- full name and address / company name and registered office of the test organizer;
- place and date of start / end of the testing;
- planned route;
- a list of people responsible for securing the route of the autonomous vehicle;
- signature of the organizer / representative.

Mandatory attachments:

- proof of compulsory civil liability insurance for damages arising in connection with such testing, which should take effect upon obtaining a permit for autonomous vehicle testing;
- proof of payment of the premium for this insurance;
- a copy of the decision on professional vehicle registration.

⁸⁶ Please see the report “*Autonomiczny Transport Przyszłości*”, Polski Instytut Ekonomiczny, Ministerstwo Infrastruktury, kwiecień 2020 r. (available at <https://www.gov.pl/web/infrastruktura/autonomiczny-transport-przyszlosci>).



When the full application is submitted, the traffic management authority conducts local consultations with residents of the municipality (Polish: gmina)

where the autonomous vehicle testing is to be conducted, by placing the application on its website and setting a window of at least seven days for comments. Property owners along the planned route of the autonomous vehicle may voice objections.

The traffic management authority may issue the permit after obtaining the **consent of the road administrator** and **the opinion of the relevant regional police officer** regarding the impact of testing on the traffic flow on the planned route of the vehicle. If such consent and opinion are not obtained, the permit will not be granted. In addition, the traffic management authority will not issue the permit where there is a risk that the autonomous vehicle testing will pose a threat to human life or health or to property of great value or the owner of the real estate located along the planned route on which the autonomous vehicle will move, raised an objection.

Once the permit has been issued, the test organizer is obliged to:

- enable the police to perform activities to ensure road safety and protect human life and health and property while conducting the testing;
- ensure that during the testing, in a place intended for the driver, there is a person with a driving license who can take control of the vehicle at any time, in particular in the event of a road safety hazard;
- publicly disclose information about the testing and the route of the autonomous vehicle;
- provide the Director of the Transport Technical Supervision with a report on the testing of autonomous vehicles and their equipment, in accordance with the form set out in the regulations, within three months of completing the tests.

As the presence of a backup driver during testing is compulsory, all autonomous vehicles must be equipped with a steering system and other elements the driver requires to physically take control of the vehicle. As a result, it is currently impossible to conduct testing of fully autonomous vehicles without a human at the wheel (Level 5 AVs as defined by SAE).

The current legal framework does not permit consumers to use Level 3-5 AVs on public roads in Poland.

Wider deployment of autonomous vehicles should be stimulated by the **UN Regulation on uniform provisions concerning the approval of vehicles with regard to Automated Lane Keeping System (ALKS)**, adopted in June 2020, which is the first binding international regulation on Level 3 AV. It takes effect in January 2021 and will become applicable in the EU Member States.

The UN Regulation will allow for the introduction of automated vehicles equipped with the Automated Lane Keeping System on roads where pedestrians and cyclists are prohibited and which, by design, are equipped with a **physical separation** that divides the traffic moving in opposite directions. In a first step, the Regulation limits the operational speed to **60 km/h maximum** and **passenger cars**. Moreover, the driver should always have an option to override the system at any time.

Liability

No rules specifically govern liability for autonomous vehicles. Standard liability rules apply.

i. Strict liability regime

Under the strict liability regime, **the holder of the autonomous vehicle (e.g. car owner or leaseholder)** may be liable for damage caused to people or goods by the movement of such vehicle. The holder can avoid liability if the damage is caused due to (i) force majeure, (ii) a sole fault of the person who suffered the damage, or (iii) a third party's sole fault. However, two important aspects should be pointed out here.

Firstly, the concept of "force majeure" refers to external events and does not cover unexpected and unforeseeable failures of the vehicle's mechanical units. As a result, under the strict liability regime, the holder may be held liable even if the damage is caused by technical failure of the vehicle.

Secondly, in light of settled case law, the car manufacturer, parts manufacturer or technical service provider cannot be regarded as a "third party." Under



the strict liability rules, the holder would therefore bear the risk of any defects in the car, even those he could not have known about. However, it does not preclude him from seeking redress from the car manufacturer or technical service provider.

ii. Fault-based liability

Fault-based liability may apply to a **driver** who has control over the vehicle. In the context of autonomous vehicles, such liability may be considered if there was a need for a human to take control of the vehicle, but the driver did not take control in a timely or appropriate manner, e.g. after the on-board computer issues a warning.

Fault-based liability will also apply in the event of a collision of vehicles. Therefore, **holders of vehicles** involved in a collision will be able to demand compensation only if they prove the fault of the other driver. Moreover, holders may be liable under the fault-based liability regime for damage caused to those they are transporting out of courtesy.

Liability based on fault could be also borne by the **vehicle manufacturer** if it is proved that, for example, it was guilty of negligence leading to structural errors. In each case, the burden of proof rests with the aggrieved party.

iii. Product liability regime

Manufacturers of autonomous vehicles, producers of materials, raw materials and components could be liable under the product liability regime (liability for hazardous products). Such liability is a risk-based liability, which means that the above entities cannot escape liability due to the lack of fault. However, this type of liability has important limitations:

- compensation for damage to property does not include damage to the product itself or benefits that the aggrieved party could have achieved in connection with its use (this means that the aggrieved party whose car caused the damage will not be able, for example, to claim costs of repair);
- no compensation is due if the damage to property does not exceed EUR 500. Redress for damage lower than EUR 500 is available only on general principles;

- the manufacturer is responsible for damage caused to another person's property only where the damaged thing can be regarded as a thing commonly designed for personal use and was used mainly for such purpose (as a result, entities using autonomous vehicles for commercial purposes would not be able to demand compensation based on the product liability regime).

iv. Criminal liability

Under the Polish law, criminal liability may arise only if the guilt of the perpetrator (human) has been established. In light of existing regulations, a group of people who may be potentially liable for crimes involving autonomous vehicles include **manufacturers** (in case of vehicle's defects), **repair service providers** (in a case of errors made during repairs), dispatchers (for permitting a defective vehicle), **vehicle owners** and **other people who contributed to the accident**.

Data privacy and security

The EU General Data Protection Regulation ("**GDPR**") is the principal data protection legislation. It is supplemented by:

- Act of 10 May 2018 on Personal Data Protection, which deals with specific matters in which the GDPR leaves a certain regulatory freedom for EU Member States (e.g. certification mechanisms, codes of conduct, procedural rules governing inspection of compliance with data protection laws carried out by the Polish Data Protection Authority), and
- Act of 21 February 2019 on the amendments of some legal acts in connection with the implementation of the GDPR (the act contains amendments to more than 160 sectorial regulations).

A number of provisions applicable to the processing of personal data are contained, inter alia, in the Act of 16 July 2004 – Telecommunications Law ("**Telecommunications Act**") and the Act of 18 July 2002 on Providing Services by Electronic Means.

Autonomous vehicles may generate a lot of data. **Much of the data will relate directly or indirectly to identified or identifiable individuals and thus may**



be classified as “personal data” within the meaning of Article 4(1) GDPR. Such personal data may include vehicle data insofar as it can be associated with a natural person via the car serial number or the license plate number.

According to the GDPR, the processing of personal data is lawful if processed with the **consent of the data subject concerned or on some other legitimate basis**, laid down by law, either in this Regulation or in another EU or Member State law. Such legitimate basis may be, for example, the need for: the performance of a contract to which the data subject is party; compliance with a legal obligation to which the controller is subject; the performance of a task carried out in the public interest.

Special rules apply to processing **sensitive data** (e.g. biometric data or health-related data). Processing of such data is prohibited unless the data subject has granted explicit consent (a law may rule out this option), personal data are manifestly made public by the data subject, or processing is necessary for specific reasons provided for in Article 9(2) GDPR (e.g. for the purposes of carrying out the obligations and exercising specific rights in the field of employment and social security and social protection law).

The main obligations of the **data controller** (e.g. a vehicle manufacturer gathering data on the wear and tear affecting the vehicle’s parts to improve its quality) are to:

- have legal grounds for the processing of personal data specified in the GDPR;
- implement appropriate technical and organizational measures to be able to demonstrate that processing is performed in accordance with the GDPR or any other data protection law and ensure a level of security appropriate to the risk;
- fulfil the information obligations and respect the rights of data subjects;
- follow the principles of data protection by design and default;
- maintain records of processing activities (there is a limited exemption from this obligation);

- notify a personal data breach to supervisory authorities without undue delay and, where feasible, not later than 72 hours after having become aware of it;
- carry out a data protection impact assessment (DPIA), if required; and
- designate a data protection officer (DPO), if required.

The data controller may use a third party to collect and process personal data on its behalf (e.g. an equipment manufacturer or automotive supplier). In such a case, the data controller should ensure that it has a written contract with the **data processor** setting out the subject-matter and duration of the processing, the nature and purpose of the processing, the type of personal data and categories of data subjects and the obligations and rights of the controller.

Under the GDPR, a **data subject (e.g. a car owner) has the following rights:**

- the right to be informed;
- the right of access;
- the right to rectification;
- the right to erasure (“right to be forgotten”);
- the right to restriction of processing;
- the right to data portability;
- the right to object to processing;
- the right not to be subject to automated individual decision-making, including profiling.

The GDPR provides that the **transfer of personal data outside the EEA** is not allowed without the necessary safeguards in place (e.g. adequacy decision issued by the European Commission, binding corporate rules, standard contractual clauses adopted by the European Commission, approved code of conduct or certification mechanism). In the absence of the above safeguards, data may be transferred outside the EEA only in specific situations (e.g. when a data subject has explicitly consented to such transfer).



Importantly, following a recent CJEU judgment in *Schrems II*⁸⁷ **data transfers to the United States under the Privacy Shield will be unlawful**. For this reason, organizations transferring data from the EU to the US will now have to rely on an alternative legal basis for transfer.

While *Schrems II* upholds the validity of **standard contractual clauses (SCCs)**, it places an additional burden on businesses by requiring them to take a proactive role in evaluating, prior to transfer, whether there is an “adequate level of protection” for personal data in the importing jurisdiction. If there is not, businesses must provide additional safeguards or suspend data transfers.

In January 2020, the **European Data Protection Board** adopted the first version of its **guidelines on processing personal data in the context of connected vehicles and mobility-related applications**.⁸⁸ The EDPB identified three categories of personal data requiring special attention:

- **geolocation data:** such data may be particularly invasive as it may reveal life habits of data subjects. Therefore, data controllers must be “particularly vigilant” not to collect location data except if doing so is absolutely necessary for the purpose of processing;
- **biometric data:** when considering the use of biometric data, it is recommended to offer a non-biometric alternative (e.g. a physical key or a code) and to store and compare the biometric template in encrypted form only on a local basis;
- **data that could reveal offences or traffic violations:** processing such data can only be carried out under the control of the official authority or when the processing is authorized by EU or Member State law providing for appropriate safeguards for the rights and freedoms of data subjects as stated in Article 10 GDPR.

The EDPB makes a number of **recommendations in order to mitigate privacy risks** for data subjects. The guidelines provide for, inter alia, that:

- personal data should be, wherever possible, processed internally (inside the connected vehicle);
- where data must leave the vehicle, they should be anonymized or pseudonymized as much as possible before transmission;
- even in the cases where a data protection impact assessment is not required, it is best practice to conduct one as early as possible in the design process;
- data controllers should facilitate data subjects’ control over their data during the entire processing period, through the implementation of specific tools providing an effective way to exercise their rights, in particular they should implement a profile management system inside the vehicle to store the preferences of known drivers and help them to change easily privacy settings any time.

Key legislation in the field of cybersecurity:

- Act of 5 July 2018 on the National Cybersecurity System (“**National Cybersecurity Act**”)⁸⁹ along with a number of executive regulations specifying the statutory provisions, and
- Regulation (EU) 2019/881 of the European Parliament and of the Council of 17 April 2019 on ENISA (the European Union Agency for Cybersecurity) and on information and communications technology cybersecurity certification and repealing Regulation (EU) No 526/2013 (Cybersecurity Act).

The National Cybersecurity Act does not refer directly to the Internet of Things. However, entities using or providing IoT-based solutions may fall within its scope either as essential service operators or digital service providers.

87 CJEU, C-311/18 *Data Protection Commissioner v Facebook Ireland Limited and Maximilian Schrems*, ECLI:EU:C:2020:559.

88 Guidelines 1/2020 on processing personal data in the context of connected vehicles and mobility related applications.

89 The National Cybersecurity Act is an implementation of Directive (EU) 2016/1148 of the European Parliament and of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union (NIS Directive).



Essential service operators (e.g. traffic management authorities, entities implementing Intelligent Transport Systems) are required, among other things, to:

- assess cybersecurity risks and take appropriate organizational measures to manage such risks;
- implement technical and organizational measures appropriate and proportionate to the assessed risk (including maintenance and safe operation of the information system; physical and environmental security; security and continuity of supply; implementation, documentation and maintenance of action plans);
- collect information on cybersecurity threats and vulnerabilities to incidents;
- take preventive steps and steps minimizing the impact of incidents;
- appoint a representative for contacts with competent authorities;
- report a serious incident immediately, no later than within 24 hours since its detection, to competent authorities;
- conduct security audits of the IT system used for the provision of the essential service (at least every two years).

Digital service providers (e.g. providers of cloud computing services where data collected by IoT devices are stored) are required, among other things, to:

- take appropriate and proportionate technical and organizational measures to manage risk;
- take preventive steps and steps minimizing the impact of incidents on the digital service to ensure continuity of provision of such service;
- appoint a representative for contacts with competent authorities (if the digital service provider does not have an organizational unit in one of the EU Member States but offers digital services in Poland and did not appoint such representative in another EU Member State);

- carry out activities enabling the detection, recording, analysis and classification of incidents;
- report a significant incident immediately, no later than within 24 hours of detection, to competent authorities.

Telecommunications and 5G

On 6 March 2020 the President of the Office of Electronic Communications (UKE) announced a highly anticipated 5G auction in 3.6 GHz band.

The auction was supposed to cover four nationwide frequency licenses in the 3.6 GHz band, and each booking included an 80 MHz block valid until 30 June 2035. The reserve price for each block had been set at PLN 450 million (approx. USD 120 million).

Following the COVID-19 outbreak, the auction was suspended and not resumed. Instead, the government decided to launch a new auction.

According to the Ministry of Digitalisation, starting the auction from the very beginning would help avoid legal doubts arising from suspension of the previous auction and properly address cybersecurity issues by making it obligatory to include in the auction documentation requirements concerning security and integrity of telecommunications infrastructure and services.

A recent draft regulation of the Ministry of Digitalisation states that nationwide reservation decisions for 3.7 GHz band will be issued by 27 August 2021.

First there will be a consultation procedure with regard to tender or auction documentation. The **tender / auction will be announced immediately after the consultation procedure.** After the results of the tender / auction are announced, the President of UKE shall immediately initiate the procedure for the general exclusive frequency license. The President of UKE shall, by way of an immediately enforceable decision, reserve frequencies for the benefit of the entity / entities selected in the tender / auction.



To our knowledge, the government has not taken an official position on cellular vehicle-to-everything communication versus dedicated short range communication (DSRC).

The use of spectrum in Poland is determined at two (optionally three) levels, namely in:

- National Frequency Allocation Table;
- frequency management plans (such plans constitute attachments to ordinances issued by the President of UKE), and optionally
- regulations of the minister for communications (none issued to date).

According to the Ordinance no. 56 of the President of UKE dated 15 October 2009, **the frequency range 5875-5905 MHz may be used for intelligent transport systems (ITS) related to safety.**

As an EU Member State, Poland is obliged to implement Directive 2018/1972 establishing the European Electronic Communications Code (“EECC”). The EECC brings a number of changes that may be relevant for autonomous and connected car technologies. These include, for example:

- **extra-territorial use of numbers:** the EECC requires that national regulators determine certain non-geographic numbering resources (numbers not linked to a specific geographic area, e.g. through a local area prefix) for use outside the assigning Member State (but still within the EU);
- **over-the-air provisioning:** the EECC requires that Member States promote over-the-air (OTA) provisioning of numbers that enables the reprogramming of communications equipment identifiers without physical access to the device (this should facilitate switching of electronic communications providers, which seems particularly relevant for machine-to-machine service providers who may not necessarily have such access to their devices);

- **machine-to-machine (M2M) services:** the EECC brings more clarity for providers of transmission services used for M2M services. Although such services are a distinct category of “electronic communications services” (ECS), they are exempted from a number of provisions applicable to other ECS (e.g. specific end-user protection rules).

In Poland, the EECC will be implemented by adopting a new Act – Electronic Communications Law, which will replace the currently applicable Telecommunications Act. As of December 2020, the draft is being discussed at the government level and has not yet been submitted to Parliament.⁹⁰

COVID-19 impact

The COVID-19 pandemic has shown the importance of autonomous technologies and accelerated their implementation in Poland. A good example is the **opening of the air bridge** in Warsaw between the Central Clinical Hospital of the Interior Ministry and the temporary COVID-19 hospital at the National Stadium for **special transport drones produced by Spartaqs (Polish company) carrying tests and blood samples.** There are plans to use them in the future to transport medicines and organs for transplantation.

Another example illustrating a positive impact of the pandemic on the development of autonomous technologies is the cooperation between the University of Life Sciences in Lublin, Noyen and KUKA to design a **device for automatic disinfection of production halls, warehouses, communication routes and bus stops.**

However, exceptional circumstances related to the pandemic have resulted in a **substantial delay to a planned 5G auction.** Initially scheduled for early 2020, the proceedings were first suspended and then annulled. Currently, the government is looking to complete the allocation of frequencies in the 3.7 GHz bands by August 2021.

⁹⁰ Although the new Act has not entered into force yet, some consumer protection measures implementing the EECC have been already introduced as part of a legislative package adopted in connection with the outbreak of the COVID-19 pandemic (e.g. the right of the subscriber to terminate an agreement for the provision of telecommunications services at any time upon one month’s notice period if such agreement was automatically extended for an unspecified period of time).



South Korea



Regulatory overview

Key Korean Government agencies and their roles

Government agencies	Role	Governing/Relevant Laws
<p>Ministry of Land, Infrastructure and Transport (MOLIT)</p> <p>(n.b. KATRI (Korea Automobile Testing & Research Institute) is an institution under MOLIT)</p>	<ul style="list-style-type: none"> Provides ITS (Intelligent Transport Systems) services and platforms.⁹¹ Makes Laws & Regulations (e.g., Announces safety standards for Level 3 AVs) 	<p>Motor Vehicle Management Act</p> <p>This is a law governing the management, performance quality and safety of automobiles. It serves as the basis for operating AVs, e.g., provides the definition of AV, allows test driving etc.</p> <p>The Enforcement Decree of this Act stipulates the requirements for safe driving and test driving of autonomous vehicles.</p> <p>Guarantee of Automobile Accident Compensation Act</p> <p>This is a law that governs compensation for damage caused by the operation of automobiles. The Act specifies the obligations of the car owners, e.g., to subscribe to an insurance policy. (A requirement for insurance, even for the operation of test-driving, is stated in this law as well).</p>
<p>Ministry of Science and ICT (MSIT)</p>	<ul style="list-style-type: none"> Information and Communication Technology Infrastructure ICT Service/Platform Frequency Distribution 	<p>Transport for NSW</p>
<p>Korean National Police Agency (KNPA)</p>	<ul style="list-style-type: none"> Governs/regulates matters occurring on the roads (e.g., accidents). Issues driving licenses / Verifies authenticity of the licenses. Builds high-tech infrastructure in response to development of AVs [= Currently in the process]. 	<p>Road Traffic Act</p> <p>This is a law that aims to resolve traffic problems on the road and regulate safe driving. The Act assumes that a 'driver' is a 'human' and thus 'driving' requires operation of a steering wheel and brake by a human being. (There are some parts of the current RTA that contradict/do not cover the operation of AVs.)</p>
<p>Ministry of Trade, Industry, and Energy (MOTIE)</p>	<ul style="list-style-type: none"> Advancement of Autonomous Technology, Commercialization of Technology SME Globalization & Trading Support 	
<p>Korea Transportation Safety Authority (TS)</p> <p>(Korea Automobile Testing & Research Institute)</p>	<ul style="list-style-type: none"> Researches before the govt. makes laws Involved in drafting and publishing transportation-related policies 	

⁹¹ Major ITS services and platforms designed and provided by MOLIT include AFC (Automatic Fare Collection), ETCS (Electronic Toll Collection System), and ATES (Automatic Traffic Enforcement System). The government provides national ITS data collected as such to the private sector to help the private sector with enhancing and expanding their ITS services. (See ITS brochure for further details; http://www.molit.go.kr/upload/cyberJccr/pdf_file/ITS%20brochure.pdf)



Rules/Regulations/Laws or Guidance at the federal level

1) Autonomous Vehicle Act

- Effective from May 1, 2020.
- Objectives: Provides necessary support/ infrastructure for introduction, spread and safe operation of AVs. Regulates necessary requirements in relation to AVs. Ultimately, the Act aims to contribute to the improvement of the public's living conditions and the development of the national economy by promoting and supporting the commercialization of AVs. (Paraphrased Article 1)
- Key parts of the Act
 - (1) Designation of autonomous driving safety zones: The Act offers a basis for the Minister of Land, Infrastructure and Transport's authority to designate "autonomous driving safety zones" and certain places on public roads where people can operate their vehicles autonomously. In designating the zones, the Minister can consider whether the infrastructure has been created to support safe operation of AVs (Article 6 of the Act). In line with this provision, the Enforcement Decree of this Act provides the regulations on the standards and procedures for designating autonomous driving safety zones. More specifically, the Enforcement Decree requires that road structures, autonomous driving cooperation systems and the construction status of detailed road maps be considered when designating such safety zones. When designating or changing such safety zones, the authority shall notify autonomous vehicle manufacturers, etc. (Article 5 of the Enforcement Decree of the Act).
 - (2) The Autonomous Vehicle Act enables the designation of AV Pilot zones in which paid passenger ride and delivery services using AVs are allowed.

- Unconventional vehicles not complying with the Korea Motor Vehicle Safety Standards (KMVSS),⁹² such as delivery robots, will be allowed if safety measures are provided by the operating entity.
- Pilot tests of the new V2X technology will be also be allowed in the AV pilot zones.
- Designation procedure: Application by municipal & provincial governors Committee Review (chaired by MOLIT minister) Designation of AV pilot zone.

2) Three Guidelines were announced on December 15, 2020

- 'Guidelines' currently, and thus, do not have binding effect – persuasive/recommendation only. Published as government publications with the statement "considering the complex nature of the matter [AVs], it is hard to institutionalize in a short period of time" (press release by MOLIT on Dec. 15).
- (1) The Ethics Guideline for AVs and Stakeholders
 - Press release: "The principle rule is that AVs shall be designed and manufactured in a manner such that protection of human life can be prioritized. Accordingly, rules such as 'human lives shall be prioritized over property' and 'if avoiding accidents completely is impossible, [devise a method to] minimize the loss of life' are included in the Guideline. Also, there are some ethics guidelines in relation to the user of the AV, such as 'one's operating an AV should not infringe others' freedom and rights' and 'the user is required to take safety education to operate an AV properly.'"
- (2) The Guideline for Cyber Security
 - Based on the UNR No.155 introduced in June 2020, MOLIT has written the Guideline for Cyber Security focusing mainly on a recommendation for automobile manufacturers. The Guideline was announced on December 15, 2020.

⁹² KMVSS refers to the corresponding standards of the Automobile Management Act of Korea. (a.k.a. Motor Vehicle Management Act) – See Chapter III of the Act for further details.



- According to the Guideline, a manufacturer should “preserve security by utilizing cybersecurity management procedures, for example, by “detecting and notifying users of risks, based on a ‘risk evaluation process’; reducing the level of risk by utilizing a ‘security measures process’; carrying out a ‘verification process’ to confirm the adequacy of the security measures.” (Press release)
- MOLIT is planning to revise the relevant law to incorporate the guidelines and obligate the relevant parties to take actions to preserve cybersecurity. (According to a press release dated Dec 15, 2020, the government plans to implement a law incorporating this guideline in July 2022)
- (3) Guideline for the Manufacture/Safety of Level 4 AVs
 - The government has provided a system for commercialization of Level 3 AVs this year (July 2020) and is currently in the process of introducing one for Level 4 AVs. The Guideline was announced on Dec. 15 to promote technology development for AVs by providing recommendations on necessary requirements for the safe operation/design/manufacture of AVs before the government’s official enactment of the law.
 - The Guideline is composed of three parts: (i) System security area; (ii) Safe operation area; and (iii) Safety education and ethical considerations. Part (i) provides guidelines to minimize design defects and malfunctions of the AV and to protect the AV from cyber threats. Part (ii) aims to minimize the risk of accidents in the operation stage by providing guidelines for safe interaction among the users of the road (e.g., pedestrians, other cars, etc.) under diverse road conditions. Part (iii) concerns proper design and operation of AVs.

Key Governmental Policies on AVs

1) ‘ICT Regulatory Sandbox’⁹³

- The aim of this scheme is to help the market entry of new technologies and services that are acknowledged to be innovative and safe. The scheme allows technology and service developers to conduct demonstration tests (albeit with restrictions as to time, place, and scale).
- Key contents/system
 - **(1) Prompt Confirmation** –When a company is starting a new technology/industry, it can inquire whether any relevant regulations exist and whether a permit is required. The government agency will reply within 30 days. (If it receives no reply from the government within 30 days, then the company making the inquiry may assume there is no regulation that applies to its case).
 - **(2) Temporary License** – Where companies providing new products/services are having difficulties in releasing their products/services in the market because of the ambiguous or unreasonable regulations, notwithstanding the safety and innovation of such products/services having been proven, a temporary license may be granted. Once the temporary license is granted the products/services are not subject to the existing regulations upon satisfying certain conditions. Licenses can be granted to cover a maximum of 2+2 years, with the approval of the “Public-Private Regulatory Special Case Deliberation Committee” (allowed for a 2 year term, which may be extended for another 2 years, subject to an obligation to improve the relevant laws and regulations within the period of the license).

⁹³ This Regulatory Sandbox scheme is being governed by the Ministry of Science and ICT of Korea, thus often referred to as ICT Regulatory Sandbox in a short form. (<https://www.korea.kr/special/policyCurationView.do?newsId=148857563>)



- **(3) Demonstration Exception** - When testing and verification of new products/new services are required at a time when relevant laws and regulations are ambiguous and unreasonable or when there are some prohibitive regulations, etc., testing of new technologies or services is permitted, despite the existing regulations, under certain conditions (e.g., within a limited area/scale/period). This exception can be allowed for a maximum of 2+2 years with the approval of the “Public-Private Regulatory Special Case Deliberation Committee” (allowed for a 2 year term, which may be extended for another 2 years, subject to an obligation to improve the relevant laws and regulations during that period. When delayed, a temporary license may be used.)
- A case that benefited from the system is the Siheung Baegot New Town Life Park and its Autonomous patrol vehicle “Goalie.” While the release was delayed, the project received permission for test-operating through the ICT sandbox system.

2) ‘Land Transportation Innovation Fund’

- Operation began in 2020 with an investment of approximately KRW 17 billion. According to the Minister of Land, Infrastructure and Transport, the scale of this fund will be expanded continuously.

3) Establishment of an ‘Innovative Growth Support Center’

- The government invested KRW 6 billion to start the establishment of an Innovation Growth Support Center which is slated to be completed in early 2022. This 2-story center will be as large as 2000m² and will be equipped with self-driving R&D facilities, such as a vehicle maintenance garage, security garage and a data analysis facility. This is a policy that enables small and medium-sized enterprises, for whom it has been difficult to equip their own vehicle storage facilities and research facilities, to develop and secure technologies without incurring large costs.

4) Cross-ministry R&D plan for Commercialization of Level 4 AVs (investing approximately KRW1.1 trillion) to be commenced in 2021.

Government Stance/Government representatives’ statements

- Overall attitude: Supportive and willing to cooperate
 - Many regulatory obstacles remain, but government/relevant authorities are making efforts to alleviate them by implementing policies such as regulatory sandboxes.
- Hyun Mi Kim, the Minister of Land, Infrastructure and Transport: “Next year, the R&D to commercialize Level 4 fully autonomous vehicles will begin. ... Also, the detailed road maps which are essential for autonomous driving will be built by 2022, two years ahead of the previous plan, for every highway and national highway across the country. The establishment of the next-generation intelligent transportation system (C-ITS) as well will be initiated soon, so that it can be built on major highways and national highways by 2022.”⁹⁴
 - The ‘customized system improvement plans’ to support technology development announced by Minister Kim includes, *inter alia*;
 - Establish requirements for permits to operate autonomous shuttles without driver’s seats;
 - New rules for test driving of unmanned delivery vehicles and remote-controlled autonomous vehicles;
 - Loosening the requirements for permitting autonomous vehicles in the stage just before commercialization.

⁹⁴ Resource: Article titled “Government will speed up to support the AV-developing companies ... ‘Innovative Growth Support Center’ construction commenced” (dated June.19, 2020) published on the website, “Republic of Korea Policy Briefing(www.korea.kr)”; (<https://www.korea.kr/news/policyNewsView.do?newsId=148873686&pWise=sub&pWiseSub=B2>)



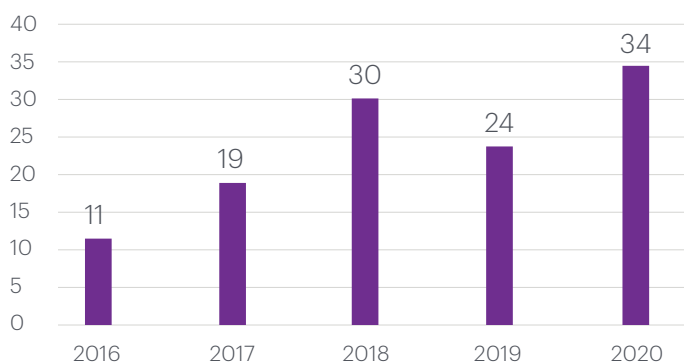
Driverless vehicle testing and deployment

The Korean government (MOLIT) has been operating a “Temporary permit scheme” since 2016 in order to support the development of autonomous-driving technology. The scheme allows test-operation/test-driving of qualified AVs on public roads.

- As of November 2020, 119 AVs from 41 entities have received permits and the distance driven in Korea has exceeded 1,170,000 km.

Car makers	31
Auto parts manufacturers	5
IT, Telecom., Elec. Companies	14
University	23
Research Institution	21
Start-up	25
Total	119

- Chart – Number of permits granted in past 5 years (Resource: Korea Transportation Safety Authority)



- The current policy, however, requires AVs to have a driver on board (the form of the AV must be the same as that of *traditional cars*). Thus, any *new types* of cars must take a special route, with additional reviewing procedures, to obtain a permit.
 - On Nov 19, 2020, the government (MOLIT) published an administrative notice to revise the procedures for granting temporary permits.

- Key revisions to note:
 - Breakdown the category of AVs into three types; (A) the traditional type of AV; (B) AV without a driver’s seat; and (C) Unmanned AV.
 - Under the current procedures, type (B) and (C) AVs are not eligible to obtain a temporary permit. (In the case of type (B), a permit is obtainable only when an exception in the law applies.) After the revision occurs, both type (B) and (C) will be eligible to receive a permit.
 - Tailored permitting requirements will apply for each type of AV. For example, for type (B) AVs, a temporary permit may be granted only if the AV has incorporated certain functions – e.g. an emergency stop button for passengers, emergency controls, automatic stop function in case of breakdown, etc.

Temporary Permits and Other requirements for test driving

Currently, only autonomous vehicles that have received a temporary driving permit (upon the condition that a driver is on board) are allowed to operate on the roads across the country.

- At least a “temporary driving permit” from the Minister of Land, Infrastructure and Transport is required for test driving of autonomous vehicles. Also, a preliminary test drive of 5000 km in accordance with the “Regulations on the Safe Driving Requirements and Test Driving of Autonomous Vehicles” is required.
- Since February 2016, permits have been granted only to vehicles that meet the “minimum safe driving requirements.” (100 cars had obtained a temporary driving permit, as of June 19, 2020).
 - “Minimum safe driving requirements”
 - [See “Regulations on the Safe Driving Requirements and Test Driving of Autonomous Vehicles” (Chapter 2, para 1)]



- Vehicle has to be certified to meet minimum safe driving requirements through a self-certification process by eligible manufacturers, or by the government (Article 30(3) of the VMA; and Article 34 of the Enforcement Decree of VMA).
 - Any car owner or party who has the right to use the car, who wishes to obtain a temporary driving permit for the purpose of testing/researching AVs (“applicant for autonomous vehicle temporary driving permit”), is liable for damages for personal injuries arising from the operation of such vehicle. In addition, he/she must subscribe to adequate insurance to ensure payment of damages.
 - The applicant for an AV temporary driving permit must conduct sufficient pre-driving (5000 km) at a test facility, etc. to confirm the operation of the autonomous vehicle functions.
 - The applicant for an AV temporary driving permit must submit a list of test products and related data to the performance test agent. The test products and related data which must be submitted include: the vehicle subject to the permit application, descriptions of technical stages, structures and functions of such vehicle, insurance and other subscription certificates, pre-test driving report, etc.
 - In order to obtain a temporary driving permit to operate an AV, an “AV test drive” notice must be posted on the rear of the vehicle. The size of the letters must be at least 70 mm in length and width, respectively, and such notice must be attached to a position of an appropriate height that can be easily seen by a driver behind such vehicle and must be identifiable at night.
 - Permitted zones/areas for operation: From November 2016, it has been possible to operate on all roads in the country except for protected areas for the transportation of vulnerable people (e.g., children protected areas). (Article 26-2(1)3 of the Enforcement Rules of the Vehicle Management Act).
 - For any vehicles that have difficulty meeting the safety driving requirements and safety standards (“Vehicle Rules”) due to their technical features (e.g., autonomous shuttle bus has no available driver’s seats – thus, particular regulations such as the safety driving requirements and safety standards based on the existence of a driver’s seat cannot be fulfilled), temporary operation thereof is permitted by applying special regulations.⁹⁵
- Test driving of autonomous vehicles on the condition that the driver will be on board was permitted by Ordinance of the Ministry of Land, Infrastructure and Transport (the Vehicle Management Act and the Enforcement Decree of the Vehicle Management Act).
- The test driver is responsible for any accidents that occur during temporary operation.
 - Scope of liability: If a driver causes injury to another person, the driver is liable to compensate for the damage (injury) caused by the accident (Guarantee of Automobile Accident Compensation Act). However, in terms of criminal liability, AVs are not subject to punishment as an AV does not fall within the scope of ‘vehicle’ under the Act on the Aggravated Punishment, Etc.

⁹⁵ See Article 114 of the Regulation on the Performance and Standards of Automobiles and Automobile Parts; and Article 22 of the Regulation on Safe-driving Requirements of AVs and Test-driving.



AV testing at the 'test-bed' (K-City)

- AV proving ground, K-City, officially opened in Dec. 2018. K-City provides a real-world environment, including highways, urban and suburban roads, parking lots with 35 experimental facilities such as tollgates, crosswalks, BRT lanes, intersections, WAVE and 5G stations.
- Workspaces for participating companies and new facilities to simulate extreme weather and GPS shadowing will be added by 2022.
- 'Test-bed' plan (Resource: Korea Transportation Safety Authority):



Source: Korea Transportation Safety Authority



Liability

Responsibilities of the actors

The Monthly KOTI Magazine on Transport (2020.10) summarizes responsibilities of the relevant actors, set out in [the Ethics Guideline for AVs and Stakeholders](#), as follows:

Government agencies	Role	Governing/Relevant Laws
Design Authorities - who design the AV utilizing relevant software and hardware technologies.	<ul style="list-style-type: none"> Design authorities must design AVs in a manner such that the vehicles can store driving records, etc. Design authorities must design AVs in a manner such that the vehicles may prevent accidents as much as possible. In the event of an unavoidable accident, AVs should be designed to minimize damage to the passengers and other parties. 	
Manufacturers - who develop the AV technologies or manufacturers who assemble the cars	<ul style="list-style-type: none"> Manufacturers must produce AVs in a manner such that the vehicle can record and store any driving-related data. Manufacturers must produce and sell AVs in compliance with certification standards, bioethics, information & communication ethics and engineering ethics. Manufacturers are responsible for any damage caused by manufacturing defects of AVs. Manufacturers are obligated to provide AV owners and users with instructions (e.g. cautions in using certain functions of AVs and guidelines on safe driving) - they must provide the relevant information in writing and faithfully respond to any inquiries from the drivers and users. Manufacturers must be equipped with a cyber security system and must always provide drivers and users with information on any changing matters. 	Product Liability Act (by FTC): This law governs the liability of manufacturers for any damages caused by defects in products. AVs correspond to a product under the Product Liability Act, but the software (system/program used in AVs) therein cannot be considered as a product and therefore cannot be held responsible for the product. However, liability may be imposed if such software can be interpreted as embedded software
Service Authorities - who provide services in response to the demand in the market, utilizing the AVs made by the manufacturers. (e.g. Siheung-si (City) provides patrol services with the 'Goalie' manufactured by Mando; Incheon Airport provides transport services with the autonomous trains and carts manufactured by Incheon Airport Corporation and domestic SMEs.)	<ul style="list-style-type: none"> Service authorities must protect the safety of users and shall not infringe or harm the interests of others or public interests. Service authorities must keep the software of AVs current to the most recent version available. Service authorities must protect the personal information produced in the course of providing services. Service authorities should make efforts to minimize any illegal use and abuse. 	
Drivers	<ul style="list-style-type: none"> Drivers must drive AVs according to the vehicle's intended purpose and functions. Drivers must not make any arbitrary or illegal modifications that could cause safety problems in AVs. Drivers must complete a sufficient amount of training for safety before driving. 	



At least for now, the statutes/laws of Korea are silent on issues concerning allocation of liability in case of accidents (the AVA only going so far as to stipulate a narrow insurance requirement).

Additional liability imposed on the manufacturers under the UN Regulation

- A new UN regulation will soon require vehicle makers in South Korea (together with those in Japan and EU) to secure connected vehicles from cyber security threats.
- Concern on Cyber Security Threats: hackers remotely accessing autonomous vehicles, posing a risk to public health and security.
- UN Regulation:
 - Aim: Ensure manufacturers take adequate steps (e.g., take action and respond when consumers' cars get hacked) to protect their vehicles and customers from these types of threats.
 - Manufacturers must address specific threats, such as potential malware infiltration of servers, which could give hackers access to troves of connected vehicle data.
 - Manufacturers must document ways they will protect vehicles from specific threats, how they will update authorities on the success of their efforts at least once annually, and how they will report pertinent data on cyberattacks.
- While the date of implementation varies by region, in South Korea the Regulation was incorporated into the "Guidelines for Cyber Security", which was announced by MOLIT on December 15, 2020. – See 5.2. below for further details.

Data privacy and security

Exemption from general data privacy rules in the context of AV operation, subject to anonymization under the AVA.

Generally, under the data protection laws of Korea, activities/businesses that collect and use personal information are subject to strict restrictions, such as consent requirements, use for consented/specified purposes only, etc. Traffic information of pedestrians, other drivers and drivers of AVs, fall within the scope of 'restricted' information as those are personal information as well.

However, the Autonomous Vehicle Act (AVA) provides an exemption from data restrictions in the Korean data protection laws. More specifically, Article 20 of the AVA provides that the three Korean data protection⁹⁶ laws are not applicable to the use of personal information⁹⁷ collected in the course of the operation of AVs, provided that the information is anonymized.*

- Implications of the AVA: Collecting and using personal data may not necessarily trigger general data protection requirements under the relevant laws.
 - Note*: Providing an exemption for the data protection laws as such does *not mean that use of the data is unconstrained throughout the interval* between the collection of data and the anonymization of such data.
 - The AVA does not, by itself, clarify (to) what scope/extent the handling of such data is exempted from the restrictions before anonymization is done.
 - Where personal data is collected outside Korea and anonymization is done outside, whether you need 'consent' to use such data or are permitted to use it without consent remains unclear.

96 Personal Information Protection Act, Act on the Protection, Use, etc of Location Information, and Act on Promotion of Information and Communications Network Utilization and Information Protection, ETC.

97 'Personal information' here means (i) personal information within the meaning of Article 2-1 of the Personal Information Protection Act, (ii) location information of individuals within the meaning of Article 2-2 of the Act on the Protection, Use, etc. of Location Information, and (iii) other information designated as personal information by Presidential decree.



The Guidelines for Cyber Security (announced by MOLIT on December 15, 2020)

- Legal status of the Guidelines: ‘Recommendations’ (i.e., not yet a ‘law’ and thus, persuasive only and not binding).
 - However, the government stated in the Guidelines published on December 15, 2020 that this is just a first step. The government is planning to enact laws/legal standards regarding cybersecurity, with the goal of implementing such laws beginning in July, 2022.
- The Guidelines have been made based on the UN Regulation on Cybersecurity (UNR No.155).
- Key contents:
 - Manufacturers are recommended to adopt a CSMS (Cyber Security Management System);
 - To preserve cyber security, manufacturers are recommended, *inter alia*, to –
 - set a deadline within which the risk can be managed and respond as soon as possible to cyber threats so as to prevent/minimize the damages.
 - Keep monitoring the system after initial registration of the car and be equipped to detect cyber threats/attacks from the information collected (e.g., information collected from the data storage system of the car) and analyze what the weakness of the system is.

Telecommunications and 5G

“5G+ Strategy”

In April 2019, the Korean government announced a “5G+ Strategy” in order to realize innovative growth based on 5G technology, through cooperation among related departments and agencies. The government selected 10 “core industries” and 5 “core services” as strategic 5G industries and introduced support plans

customized to each industry, based on market maturity and demand.

‘5G vehicles-to-everything(V2X)’ was selected as one of the 10 “core industries”, while ‘autonomous vehicles’ was selected as one of the 5 “core services.”

For the selected “industries” and “services”, the government is supporting the development of the technology and under such support some major Korean companies are devoting significant resources to its development.⁹⁸

Development/Progress currently

February 2018: SK Telecom and the Korean Transportation Safety Authority (TS) successfully ran “cooperative driving” on multiple 5G self-driving cars in K-City, pilot city for self-driving in Hwaseong on Feb. 5, 2018. (https://www.sktelecom.com/en/press/press_detail.do?idx=1264)

- Two self-driving cars equipped with 5G technology successfully ran trial driving while sharing traffic information with each other.
- Testing confirmed –
 - A self-driving car automatically stops when 5G and HD map alerted the driver of a child appearing in the vehicle’s blind spot.
 - 5G network alerts drivers for jaywalking passengers and accidents on the road and facilitated communication at the crossroads with no traffic sign.
 - HD Map provides detailed traffic information, including reports of accidents in real-time.
 - Two self-driving cars at the crossroads communicating via 5G network decide which vehicle to first pass through the congested area.
 - A CCTV spotted a jaywalking child in a school zone area and alerted a nearby vehicle through a 5G network, allowing two self-driving cars to stop all at once.

⁹⁸ Further details available at <http://www.businesskorea.co.kr/news/articleView.html?idxno=30733#:::text=The%2015%20industries%20consist%20of,%2C%20information%20security%2C%20edge%20computing%2C>



- November 2019: Hyundai Mobis and its partners, Korea Telecom(KT) and Hyundai MnSOFT successfully demonstrated 5G Cellular Vehicle-to-Everything (C-V2X) communications between autonomous test vehicles (AVs) at the company's Seosan Proving Ground in South Korea. (Nov, 2019)
 - Hyundai Mobis and KT have been cooperating closely with each other since they formed a technical alliance for connected cars in 2018. The two companies entered into an MOU for jointly developing '5G-based connected car technology' in August, 2018, and KT built the 5G infrastructure for the technology's development at the Seosan Proving Ground by the end of 2018. Hyundai Mobis began to work in earnest with the Hyundai MnSOFT software development division on the first project in January 2019, which included development of real-time navigation update technology and mobile communication-based C-V2X technology. Since that time it has been creating related technologies. (<https://www.traffictechnologytoday.com/news/autonomous-vehicles/successful-5g-c-v2x-communication-between-avs-demo-in-korea.html>)

Further developments

March 29, 2020 SKT news release (https://www.sktelecom.com/en/press/press_detail.do?idx=1451): "Furthermore, the company will continue to work closely with Seoul Metropolitan Government to accelerate the C-ITS (Cooperative Intelligent Transportation System) project by applying Road Learner, which consists of 5G ADAS (Advanced Driver Assistance System) and Live HD Map Update solution. 5G ADAS and Live HD Map Update solution are key technologies for autonomous driving as 5G ADAS improves driving safety through features including lane departure warning and forward collision avoidance, and Live HD Map Update solution reflects road situations to HD maps in real time."

COVID-19 impact

Support policies as to COVID-19

Largely two types of support have been provided by the Korean government:

- 1) Production Support
 - Simplifying the import procedures for auto parts
 - Special extension of work hours by allowing more than 52 hour per week
- 2) Liquidity Support
 - Employment Retention Subsidies
 - R&D Support for localization of auto parts
 - Loan & credit guarantee program for SMEs
 - Extension of debt maturity periods

In Korea, it appears that COVID-19 has sped up AV legislation and adoption.

- **Incheon International Airport.** Introduced autonomous trains (and cart robots) – In operation since October 14, 2020; implemented without delay.
 - On October 14, 2020, Incheon International Airport Corporation introduced and is operating the world's first indoor autonomous trains and cart robots. Each of the two autonomous trains are in operation in the duty-free area of the Arrivals hall at Terminal 1 and the duty-free area in the Departures hall at Terminal 2 respectively. The trains assist vulnerable users (e.g. the elderly, pregnant women, disabled, etc.), while the six cart robots are supplied to transport passengers' luggage and/or certain cargos.
 - Both autonomous trains and cart robots were developed by Incheon International Airport Corporation in cooperation with domestic SMEs.
- **Siheung Baegot New Town Life Park.** Autonomous patrol car "Goalie" will be in operation soon.
 - An autonomous patrol car "Goalie" was developed by Mando, the second largest auto parts maker in Korea. The Goalies will be



deployed in Siheung Baegot New Town Life Park to patrol the area at nighttime and video-record CCTV blind spots, sending the recordings to the control center.

- The project was partially necessitated by relevant regulations rather than COVID-19 concerns. However, the ICT Board for regulatory sandboxes has allowed the test operation of Goalies to proceed and the project was given a temporary respite from regulatory regimes until March, 2022.
- **“AV Pilot Zone” scheme:** A new system introduced under the Autonomous Vehicle Act (Effective from May, 2020).
 - **AV Pilot Zone:** A special regulatory district to support the demonstration of autonomous driving services. If a district is selected as an AV pilot zone, self-driving manufacturers can carry out the simulation of a real-life situations (and actually receive fares/consideration). Moreover, a diverse range of (special) exemptions from regulations are available for private manufacturers who are willing to test-operate in the AV pilot zone (e.g., they can obtain a permit for test-operating without meeting the vehicle safety standards). This provides an opportunity for a manufacturer to gauge market reaction and the government can collect relevant data and ideas that may be useful in making further policies/institutional improvements.
 - Pursuant to the new law, **“AV Pilot Zones”** were designated⁹⁹ for the first time in November 2020. The regions that were selected and some key services that were allowed are as follows:

No.	City/Province	Area designated as ‘AV Pilot Zone’	Autonomous driving Services to be provided include
1	Seoul	Area of 6.2km ² range in Sangam-dong area	Shuttle service between DMC station and commercial/residential/park areas
2	Chungbuk/Saejong (Jointly applied)	About 22.4km of Osong-Saejong Terminal route of BRT ¹⁰⁰	BRT service between Osong Station and Sejong Terminal
3	Sejong	22.9km of BRT circular route; and Area of approx. 25km ² in living zones 1-4.	Demand-responsive shuttle bus service circulating within Sejong Government Complex.
4	Gwangju	Area of approx. 3.76km ² in 2 zones in Gwangsan-gu	Road cleaning cars, Waste collecting cars.
5	Daegu	About 2.2km ² area in Suseong Alpha City About 19.7km ² area of Technopolis and Daegu National Industrial Complex About 7.8km route of the road connected to industrial complex.	Shuttle service within Suseong Alpha City (Samsung Lions Park-Daegu Museum of Art route). Demand-responsive taxi service in Technopolis and the National Industrial Complex
6	Jeju	Certain parts of the route between Jeju International Airport and Jungmun Tourist Complex (38.7km); and 3km ² area within Jungmun Tourist Complex.	Airport pickup shuttle services (Jeju International Airport-Jungmun Tourist Complex route)

⁹⁹ Under the supervision of the Ministry of Land, Infrastructure and Transport, the “Autonomous Vehicle Demonstration District Committee” was created to designate AV pilot zones. (The committee consists of six commissioners from public sectors (vice-ministers of the Ministry of Land, Infrastructure, and Energy/ Ministry of Economy and Finance/Ministry of Science and Technology/ Ministry of SMEs and Startups /National Police Agency, as well as the Minister of Land, Infrastructure, and Energy) and 12 commissioners from private sectors (experts in automotive/transportation/communication/ city)

¹⁰⁰ BRT, which stands for Bus Rapid Transit, is a transportation system in Korea, offering express buses-only lanes, convenient transit services, etc.



(Based on an announcement of the Ministry of Land, Infrastructure and Transport made on November 22, 2020)

Summary

Since the outbreak of the pandemic, the need and demand for so-called 'untact' services has increased greatly in Korea, as in other countries around the world. Accordingly, the government has been supporting (and cooperating), more actively than ever, in relevant projects/businesses of AV manufacturers.

Many Korean companies developing AV systems had been forced to stay at a demonstration stage, even after sufficient technology development, due to regulatory obstacles. However, it seems that the situation has improved for those manufacturers because the government is being more supportive and relaxing certain regulations to meet the increased demand for untact services (e.g. taxis without drivers) within Korea.



Turkey



Regulatory overview

The Turkish government recognizes and supports the international efforts for development of driverless and automated vehicles. Although the legislative and regulatory background for autonomous vehicles is not ready for commercialization and utilization of such products, the Turkish government prepares and publishes policy documents including action plans and strategic frameworks for establishing a solid ground to initiate required legislative and administrative works. To that end, the Turkish government has conducted a number of studies on intelligent transportation systems:

- The first strategy document and action plan for intelligent transportation systems prepared by the Ministry of Transport and Infrastructure entered into force in 2014 as covering the period of 2014-2016.
- The Ministry of Industry and Technology has also prepared the Strategy Document and Action Plan (2016-2019) for Turkey's Automotive Industry with a specific focus on implementation of international standards in developing intelligent systems to be utilized in automotive production such as driver assistance systems, emergency brake systems, active cruise control systems, lane-keeping systems, e-Call, and testing of driverless cars.
- Ministry of Environment and Urbanization has been given the responsibility to prepare a smart city strategy and smart city program, including concerns and action plans to develop cities' infrastructural capabilities suitable for autonomous vehicles and other intelligent transportation systems.
- National E-Government Strategy and Action Plan (2016-2019), Information Society Strategy and Action Plan (2015-2018) and National Broadband Strategy and Action Plan (2017-2020) also aim to ensure collective development encouraging and facilitating the use of intelligent transportation systems with a solid legal and regulatory background which would provide the local and foreign investors to penetrate into Turkish market with autonomous vehicle and ancillary products.
- The Ministry of Transport and Infrastructure has published the National Intelligent Transportation (ITS) Strategy Document and 2020-2023 Action Plan on 05.08.2020. The Action Plan explicitly states that all groundworks in terms of development and expansion of autonomous and connected vehicles are planned to be completed by 2023. Furthermore, certain regulations and legislative amendments governing the data protection, telecommunication and liability regimes are expected to be enacted in 2021.
- Most recently, the Ministry of Industry and Technology adopted the Regulation on Type-Approval Requirements for Motor Vehicles and Their Trailers and Systems, Components and Separate Technical Units Intended for Such Vehicles As Regards Their General Safety and the Protection of Vehicle Occupants and Vulnerable Road Users (EU/2019/2144) (known as "Type Approval Regulation"). The newly introduced Type Approval Regulation sets forth certain type approval requirement for autonomous vehicles as well. The Regulation will effectively enter into force by June 7, 2022. The Type Approval Regulation mainly aims to harmonize the Turkish legislation with the EU rules. Therefore, the Regulation directly refers to European Commission and recognition of type approvals for vehicles granted within EU territory.



As the Turkish government has recently demonstrated a significant interest in developing the automotive industry by introducing the production of the first domestic car (namely, TOGG), relevant public authorities and municipalities started to prioritize investing in development of connected and automated vehicles and smart city solutions which can be commercialized and exported following the expected commercial success of Turkish domestic car. The Turkish government explicitly announced its belief that the transportation sector has been transforming as a result of the studies conducted on autonomous vehicles, connected vehicles, and intelligent road systems. 2020-2023 Action Plan states that driverless vehicle sector has been rapidly advancing due to applications such as traffic forecasts, smart decision making via machine learning, deep learning technologies, and big data. With all these technologies, it is officially foreseen that traffic accidents, which constitute a major problem in transportation security in Turkey, can be prevented by early detection of potential dangers via pre-analysis of traffic scenarios. Therefore, the Turkish government believes that legislative and regulatory background for autonomous and connected vehicles should be ready to enforce not only for the vehicles but also in terms of artificial intelligence regulations, big data solutions, and deep learning techniques.

Therefore, the Turkish government attaches a high value to working closely with industry players, academics, nongovernmental organizations, and associations of undertakings to detect the legislative and regulatory weaknesses regarding the testing and use of autonomous vehicles under Turkish law.

Currently, the Turkish government describes a long-term goal for conducting preparatory studies to make the existing infrastructure suitable for autonomous driving and to develop fully autonomous vehicles and spread their use in all modes of transport.

The regulatory agencies conducting studies to develop the infrastructure and legal background for driverless vehicles could be counted as follows. Although their regulatory authorities regarding autonomous and connected vehicles have not yet recognized by legislation,

potential issues and disputes could be resolved in consultancy with the following public bodies:

Ministry of Transport and Infrastructure (General Directorate of Transport Services Regulation)

Ministry of Environment and Urbanization

Ministry of Information and Technology

Turkish Data Protection Authority

Municipalities (particularly in terms of use of autonomous vehicles for public transportation purposes)

Information Technologies and Communication Authority

Driverless vehicle testing and deployment

Under Turkish law, there is no specific regulation or a competent body to deploy and expand driverless vehicle testing. However, the Ministry of Transport and Infrastructure's Action Plan for 2020-2023 plans to complete the establishment of Autonomous Driving Test and Certification Centers where functional and operational tests of autonomous vehicles are performed and certification services are provided.

Having said that, the Type Approval Regulation permits the testing of autonomous vehicles by the manufacturer companies in accordance with the requirements specified in the Annex-2 starting from July 6, 2022.

Furthermore, test corridors deployments in EU countries and the development of driverless/connected vehicles brought up cooperative intelligent transportation systems (C-ITS) to Turkey's agenda the test phase studies are being conducted. In this



respect, the Turkish government aims to complete the preparations for test phase and create a C-ITS test and application corridor by 2023.

Regulatory requirements

There is no other specific regulations or standard under current Turkish legislation governing autonomous vehicle testing or approval process for driverless vehicles. That said, the Type Approval Regulation stipulates the following requirements to be met by automated vehicles:

- systems to replace the driver's control of the vehicle, including signaling, steering, accelerating and braking;
- systems to provide the vehicle with real-time information on the state of the vehicle and the surrounding area;
- driver availability monitoring systems;
- event data recorders for automated vehicles;
- harmonized format for the exchange of data for instance for multi brand vehicle platooning; and
- systems to provide safety information to other road users.

It should be noted that those technical specifications relating to driver availability monitoring systems does not apply to fully autonomous/driverless vehicles.

Moreover, by entry into force of the Type Approval Regulation in 2022, autonomous vehicles will require to comply with the technical and type approval requirements of e-Call Regulation. In this respect, manufacturers will be under obligation to ensure that autonomous vehicles to be utilized in Turkey are equipped with a permanently installed 112-based e-Call in-vehicle system.

In terms of license requirements, there is no specific regulation or exception for autonomous vehicles in Turkey. In this respect, as Turkey is a party to the Vienna Convention (WÜ), every vehicle must have a driver (Art. 8 para. 1 WÜ) who must be able to intervene on request. Test drivers must possess a valid driving license; otherwise no additional training is necessary. The

General Directorate of Security is the body responsible for issuing driver licenses. However, it should be noted that specific legislation and regulation is expected in terms of license requirements in conjunction with amendment requirement for liability rules under Turkish Law of Obligations and Criminal Law.

Further, product liability laws and product safety regulations require certain safety standards and currently does not provide any exception for autonomous products.

In terms of insurance requirements, there is no specific insurance requirement for autonomous vehicle testing. However, under the Law No. 2918 on Highway Traffic, the person who owns the vehicle or who is registered in the registry as a buyer when sold with retention of title or lessee, borrower or pledgee in cases of long-term lease, loan or pledging is obliged to have a liability insurance.

In terms of autonomous platooning, the Type Approval Regulation requires a harmonized format for the data exchange (e.g. multi-brand vehicle platooning).

Driverless Vehicle Deployment

The Type Approval Regulation permits the use of driverless vehicles for personal use on public roads by laying down the procedures and technical specifications for the systems and the type-approval of autonomous vehicles to ensure the safe operation of automated and fully automated vehicles on public roads. The Regulation will effectively enter into force in 2022.

Navigating International and Local Regulations

It is evident that the legal and regulatory requirements regarding autonomous and connected vehicles are not governed by any one government entity and the legislative background has not been adapted to specific requirements for autonomous vehicles. Therefore, requests to run trials and/or test certifications require market entrants to receive consultancy services from legal professionals who are capable of conducting research to navigate regulations at international and domestic levels and effectively communicate with different public authorities as well as non-governmental organizations. Moreover, in spite



of harmonization requirements for Turkish legislation with relevant EU law due to customs union and accession process, national regulations still address potential deficiencies under Turkish law. Therefore, the need for a specialized legal counsel goes beyond doubt for potential market entrants.

While Turkish government still constructing its policy and strategy framework, neither testing nor deployment of autonomous vehicles is initiated in Turkey. Therefore, although there is no legislation explicitly prohibiting the use of driverless vehicles, the Law No. 2918 on Highway Traffic and other traffic regulations are totally constructed upon driver-based vehicles. Therefore, all approvals and license requirement for personal use of vehicles are based on the existence of a driver. Accordingly, consumers have not been permitted to use driverless vehicles for personal use.

Liability

Under Turkish law, there is no specific regulation on liability in terms of autonomous vehicle accidents. It should be primarily noted that there is currently an hot debate in doctrine regarding liability issues under Turkish tort criminal law. Therefore, in the lack of actual use and testing/deployment of autonomous cars in Turkey, there is high legal uncertainty regarding liability issues. The primary legislative piece regulating liability is currently the Law No. 2918 on Highway Traffic providing tort provisions for the “operator” of vehicles within the meaning of the Law. As the tort law principles based on “defect liability” in terms of vehicle use, the liability of “manufacturer” is considered as significantly rare under Law on Highway Traffic. However, it is still open to discussion whether manufacturers could be held liable for defects stemming from autopilot.

With regard to civil responsibility, operator, manufacturer and driver may be held responsible under Turkish Code of Obligations according to related provisions for each. In this regard, operators may be held liable under danger liability provisions, while manufacturer may be held responsible under the product safety regulations. However, the meaning of the term “driver” within this framework is considered as uncertain to assess.

On the other side, criminal responsibility may arise pursuant to Turkish Criminal Law, provided that discussions on free will are concluded at a uniform acceptance. Furthermore, natural persons either being manufacturer or programmer can be held liable under Criminal Law. However, as legal persons do not directly have criminal responsibility, manufacturers’ position is also controversial from a criminal law perspective.

Data privacy and security

The General Data Protection Regulation And Data Protection Act 2018

According to the Type Approval Regulation, any processing of personal data, such as information about the driver processed in event data recorders or information about the driver’s drowsiness and attention or the driver’s distraction within the scope of the autonomous vehicles, should be carried out in accordance with the Law No. 6698 on the Protection of Personal Data (“PDP”)

Furthermore, although Turkish e-Call Regulation does not contain any article on the personal data protection, it refers to the EU Regulation numbered 2017/79 to be taken into consideration in case of doubt. Therefore, we assume that the processing of personal data collected through the 112-based e-Call in-vehicle system is subject to the Law No. 6698 on the Personal Data Protection (“PDP Law” similar to the EU reference to the GDPR.

As all industries developing with disruptive innovation and having a data-driven characteristics, it is expected that the connected autonomous vehicles will collect and process a vast amount of data which have significant value for manufacturers and developers. Therefore, it would be crucial to define which data is deemed as “personal” and benefit from protective cloak of PDP Law in Turkey.

Personal Data is any information that can identify a natural person such as a name, an identification number, location data, an online identifier or one or more factors specific to the physical, physiological, genetic, mental, economic, cultural, or social identity of that natural person.



Personal data relating to the race, ethnic origin, political opinion, philosophical belief, religion, religious sect or other belief, appearance, membership to associations, foundations or trade-unions, data concerning health, sexual life, criminal convictions and security measures, and the biometric and genetic data are deemed to be special categories of personal data.

Special categories of personal data, if obtained by others, can leave the data subject open to discrimination or unfair treatment. For this reason, sensitive personal data merit stricter protections than other personal data.

Notably, only data relating to natural persons is protected under the PDP Law. Therefore, the term “data subject” is used in the Law to refer to natural person whose personal data is being processed.

The procedures and principles for the processing of personal data in the Law are regulated in accordance with the Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data No. 108 and the European Union Data Protection Directive 95/46/EC.

The following general principles set out in the Law shall be complied within the processing of personal data:

- lawfulness and fairness;
- being accurate and kept up to date where necessary;
- being processed for specified, explicit and legitimate purposes;
- being relevant, limited and proportionate to the purposes for which they are processed; and
- being stored for the period laid down by relevant legislation or the period required for the purpose for which the personal data are processed.

According to the Article 12 on data security of PDP Law, the data controller is obliged to take all necessary technical and organizational measures to provide an appropriate level of security for the purposes of:

- preventing unlawful processing of personal data;
- preventing unlawful access to personal data; and
- ensuring protection of personal data.

The Turkish Personal Data Protection Board has the power to take regulatory action in order to determine security requirements. In case the processing of personal data is carried out by another natural person or legal person on behalf of the data controller, the controller shall jointly be responsible with these persons for taking the necessary measures. Therefore, data processors are also obliged to take measures to ensure data security.

The controller is also obliged to carry out the necessary audits, or have them made, in order to ensure the implementation of the provisions of the Law. The controller can conduct this audit by itself or have them conducted through a third party.

The data controllers and the data processors shall not disclose the personal data that they have obtained to anyone contrary to the provisions of the Law and they shall not use such data for purposes other than that for which the personal data has been processed.

In case the processed data are obtained by others by unlawful means, the data controller shall communicate the breach to the data subject and notify it to the Board within the shortest time. Where necessary, the Board may announce such breach at its official website or through other methods it deems appropriate.

The principles regarding the processing of personal data should be at the core of all personal data processing activities. In this respect, the first question to be asked whether the data collected by autonomous vehicle is considered as “personal data” under PDP Law. It is generally understood that all these principles and requirements under PDP Law could principally be applied to autonomous vehicles given there are no specific regulation or exemptions for the data collected, processed and transferred by autonomous vehicles.

In conclusion, any manufacturer or business who aims to collect or exploit personal data collected and processed by autonomous vehicles could be characterized as data controller and need to meet the requirements set forth under PDP Law. In this respect, discussion regarding “legitimate interests”, “performance of a contract” or “requirement for explicit consent” will inevitably be on the table for autonomous vehicles.



Telecommunications and 5G

In the National Broadband Strategy and Action Plan (2017-2020), development of 5G technologies in Turkey is considered a national policy priority. The primary objectives are supporting local production, creating test and R&D networks, and incentivizing sector participants. Moreover, the Action Plan introduces the goal of inclusion of intelligent transportation systems in the annual funding programs by the Ministry of Industry and Technology and Ministry of Transport and Infrastructure until 2023.

While there have been no tenders for spectrum yet nor any licenses granted for 5G network in Turkey, the Information and Communication Technologies Authority ("BTK") granted permits to three leading companies to conduct 5G tests in Istanbul, Izmir and Ankara.

Spectrum Management

Spectrum management is regulated under Law No. 5809 on Electronic Communications and Regulation No. 27276 on Spectrum Management, however, there is no specific regulation with regard to transportation and autonomous vehicles. Within this scope, the regulatory body is the Information and Communication Technologies Authority.

Notably, the National Broadband Strategy and Action Plan (2017-2020) aims for expansion of M2M, IoT and IoE and broadband services that will eventually increase the efficiency in ITS. The government aims to complete fiber and broadband infrastructures in all state roads and highways by 2023.

COVID-19 impact

The COVID-19 outbreak changed the priorities in transportation industry in Turkey. Most companies investing in innovative solutions for transportation sector shifted their efforts to develop self-disinfection systems and tracking technologies for actual or potential patients in public transportation vehicles. Therefore, due to COVID-19 outbreak, the attention for autonomous and connected vehicles has drastically shifted toward safe and clean vehicles particularly in terms of public transportation.

With that said the official action plans for the development of autonomous vehicle sector in Turkey have been not delayed or suspended due to COVID-19 outbreak.



United States



Regulatory landscape

The United States does not have a federal regulatory framework currently in place to address autonomous vehicle testing and deployment. As a result, testing and deployment is regulated by a state-centric patchwork of laws. That patchwork is made up of 40 states and DC that have either passed autonomous vehicle legislation or are operating under executive orders. Six states have passed legislation and are also operating under an executive order (WA, WI, IL, ME, MN, HI).

Breakdown of state-level strategies

There are three main state-level strategies for fostering autonomous vehicle testing.

Approach	Seen in..	Overview
Laissez-faire, hands-off regulatory approach	Arizona	<p>This approach can be employed by either executive order, as in Arizona, or via legislation, as in Colorado. In Arizona, Governor Doug Ducey has signed two executive orders pertaining to autonomous vehicles. The first directed all state transportation officials to “undertake any necessary steps to support the testing and operation of self-driving vehicles on public roads within Arizona.” The second outlined a process to notify the state of vehicle testing but did not impose any additional regulations.</p> <p>The result of Arizona’s environment has been a significant investment from the autonomous vehicle industry. Almost every large autonomous vehicle company has tested, or is still testing, in the state.</p>
Welcoming testing environment	Colorado	<p>Colorado, on the other hand, has created an equally welcoming testing environment through the legislative process. The state’s autonomous vehicle law, signed by then Governor, now Senator, Hickenlooper, permits testing as long as the vehicle follows all existing laws (i.e. the vehicle itself meets the federal motor vehicle safety standards and it adheres to basic state traffic laws while in operation). If vehicles are able to adhere to those two requirements, companies do not have to alert the state that tests are being conducted, nor does a human driver have to be in the vehicle.</p>
Hands-on approach	California	<p>Other states, like California, have taken a more hands-on approach. It may come as a surprise, given California’s status as the state with the most autonomous vehicle companies in the country, but its regulatory regime is one of the most comprehensive. The state passed legislation directing the California Department of Motor Vehicles to create pilot programs. The resulting set of regulations established three different application and oversight processes — one for testing with a back-up driver, one for testing without a back-up driver, and one for deployment. Moreover, the deployment process is, in part, regulated by the California Public Utilities Commission, which recently promulgated regulations that permit autonomous vehicle companies to collect fees from consumers. The process requires applicants to first show proof of an active Department of Motor Vehicles permit before applying to the Public Utilities Commission. All permit applications will be subject to a Commission Vote.</p>



Spotlight

Nuro Secures California's First Commercial AV Permit

After securing a permit to commercially deploy autonomous vehicles from the California Department of Motor Vehicles, Nuro will begin charging customers for robot delivery services in the first quarter of 2021. Notably, because Nuro is not transporting passengers, the company does not have to obtain a second license from the California Public Utilities Commission.

"Issuing the first deployment permit is a significant milestone in the evolution of autonomous vehicles in California," DMV Director Steve Gordon said in a press release. "We will continue to keep the safety of the motoring public in mind as this technology develops." The deliveries will start with self-driving Toyota Priuses, but ultimately Nuro's delivery specific R2 vehicles will be used.

Waymo Begins Commercial Autonomous Taxi Service in Phoenix

Waymo, the AV subsidiary of Alphabet, announced that, starting this year, its fully driverless ride-hailing service will be open to the public in Phoenix, Arizona. Since 2017, Waymo has been testing AVs in Phoenix, and in 2018 launched a limited public ride-hailing service called Waymo One. However, this program was limited to riders vetted by Waymo.

Because of the COVID-19 pandemic, the company has increased the frequency of its cleaning regimen, adding a "cabin-air flush" between every ride which cycles four-to-five times the interior cabin air volume of the vehicle, extracting over 99 percent of the air brought into the vehicle.

Finally, nine states have taken no action on autonomous vehicles at all; however, that does not mean there are no autonomous vehicles operating in those states. A lack of legislation does not mean operating autonomous vehicles is illegal, but rather that they are not explicitly authorized. In those environments, autonomous vehicles may operate as long as they adhere to all existing traffic laws.

Call for federal action

Notably, while up to this point legislative the action is on the state level, many in the industry are calling for federal rules and regulations to provide greater certainty. Adding to the complexity is the fact that the regulations which govern vehicle construction are written and enforced by the Department of Transportation, specifically the National Highway Traffic Safety Administration. The National Highway Traffic Safety Administration controls the Federal Motor Vehicle Safety Standards, which require several vehicle components tied to human drivers. For example, all vehicles must have a steering wheel, foot pedals, rear view mirrors, etc., all of which are useless for fully autonomous cars. In sum, to create a consistent regulatory environment throughout the country, the federal government must pass a law to address vehicle construction, safety, cybersecurity, data and liability. However, to this point, Congress has been unsuccessful.

The COVID-19 pandemic briefly renewed hope in an autonomous vehicle bill making it to President Trump's desk. In April, House Republicans called for a revival of a federal autonomous vehicle bill as a mechanism to deal with COVID-19, detailed further in the COVID-19 impact section of our US report.

The move was vigorously opposed by consumer groups and did not gain significant traction. In September, Representative Bob Latta (R-OH) reintroduced the Self-Drive Act. The bill, which was previously introduced and passed in the House in 2017, is intended to create national standards for the testing and deployment of autonomous vehicles. The bill would require cybersecurity provisions for AV manufacturers, reorganize, rewrite or exempt certain federal motor vehicle safety standards, and pre-empt



states from passing new AV safety laws. In a statement Latta reminded his colleagues that the United States remains in a fierce competition with China over primacy in the AV market. The legislators also noted that the COVID-19 pandemic has highlighted the need for AVs to support vulnerable populations.

Originally, in 2017, the House of Representatives passed the SELF Drive Act with almost a dozen Democratic co-sponsors; however, the bill died in the Senate due to Democratic concerns over consumer safety, data security and liability. The SELF Driving Act, which did not pass in 2020, had no Democratic co-sponsors. Rep. Debbie Dingell continues to believe that “urgent action” is needed, but suggested that the bill is already outdated. In response to Latta’s new push, Dingell said that she has a commitment from the chair of the House Energy and Commerce Committee to prioritize a new bill in 2021.

Previously, in late 2019, Republican and Democratic staffs of the House Energy and Commerce and Senate Commerce committees held meetings intended to hash out bits and pieces of what could, ultimately, form a comprehensive autonomous driving bill. At that time, the bipartisan-bicameral approach focused on the issues where there is the most consensus: exemptions, testing and evaluation and the establishment of an Automated Vehicles Advisory Council. The bipartisan working groups released discussion drafts for each subsection and solicited feedback from various stakeholders. Chairman Roger Wicker (R-Miss) noted during a hearing in November, 2019 that the Senate Commerce Committee “received more than 100 letters from industry, state and local governments, and consumer and disability advocates.”

The Advisory Council, not in previous drafts of AV legislation, would be tasked with developing and presenting to the Secretary of Transportation “technical advice, best practices and recommendations” regarding a host of issues surrounding the AV industry, including, but not limited to, equitable access, education, cybersecurity, labor and employment, environmental impact, and safety. Notably, the draft legislation did not contain language to require AV companies to submit safety reports to US DOT. Of course, the aforementioned versions were only the latest of several draft bills that failed to pass. The SELF Drive Act passed the US House of Representatives unanimously in September 2017 and a few months later a sister bill in the Senate, the AV START Act, was approved by the Senate Committee on Commerce, Science and Transportation. However, neither bill was not brought to the Senate floor in 2018.

Regardless of Congress, the Department of Transportation has remained active in developing a regulatory framework for the industry.

The most recent indication of how the Department will move forward came in the form of the **Department of Transportation’s Automated Vehicles Comprehensive Plan**. The plan, released on January 11, 2021 looks back over what the Department has done in relation to AVs during Elaine Chao’s time as the Secretary of Transportation. However, it also lays out several steps the Department plans to take going forward. Of course, the plan laid out in this document is subject to changes brought forth by the Biden administration, specifically Pete Buttigieg who has been nominated to lead the Department of Transportation.



The document is formatted around three broad Principles that the DOT will focus on going forward:

PRINCIPLE I: PROTECT USERS AND COMMUNITIES	PRINCIPLE II: PROMOTE EFFICIENT MARKETS	PRINCIPLE III: FACILITATE COORDINATED EFFORTS
<ul style="list-style-type: none"> • Prioritize Safety: In addition to facilitating the safe integration of AV technologies, the Plan calls for oversight on misleading claims about performance capabilities. • Emphasize Security and Cybersecurity: The effort will include the development and promotion of physical and cybersecurity standards and best practices in regard to cybersecurity. • Ensure Privacy and Data Security: The DOT will focus on protecting driver and passenger data as well as the data of passive third parties — such as pedestrians about whom AVs may collect data — from privacy risks such as unauthorized access, collection, use, or sharing. • Enhance Mobility and Accessibility: The US Government will protect the ability of consumers to make the mobility choices that best suit their needs, including driving their own vehicles. 	<ul style="list-style-type: none"> • Remain Technology Neutral: The US Government will adopt flexible, technology-neutral policies that will allow the public to choose the most economically efficient and effective transportation and mobility solutions. • Protect American Innovation and Creativity: The US Government will continue to promote sensitive emerging technologies through the enforcement of intellectual property rights and the protection of technical data and sensitive, proprietary design information to prevent rival countries from obtaining an unfair advantage at the expense of American innovators. • Modernize Regulations: The US Government will modernize or eliminate outdated regulations that unnecessarily impede the development of AVs to encourage a consistent regulatory and operational environment. 	<ul style="list-style-type: none"> • Promote Consistent Standards and Policies: The US Government will engage state, local, tribal, and territorial authorities as well as industries to promote the development and implementation of voluntary consensus standards, advance policies supporting the integration of AVs throughout the transportation system, and seek harmonized technical standards and regulatory policies with international partners. • Ensure a Consistent Federal Approach: The US Government will proactively facilitate coordination of AV research, regulations, and policies across the Federal Government to ensure maximum effectiveness and leverage inter-agency resources. • Improve Transportation System-Level Effects: The US Government will focus on opportunities to improve transportation system-level performance, efficiency, and effectiveness while avoiding negative transportation system-level effects from AV technologies.

In addition to the broad principles above, the plan lays out several objectives. Many reflect the desire of the Department of Transportation to conduct and fund research, issue guidance and ask for feedback. However, the report does include some concrete steps the Department is looking to take:

- Streamline the process of seeking exemptions and waivers from Federal Motor Vehicle Safety Standards
- Conduct rulemaking and research to adapt existing Federal Motor Vehicle Safety Standards to remove unintended and unnecessary barriers to the introduction of novel vehicle designs and features enabled by ADS
- Adapt existing Federal Motor Carrier Safety Regulations to remove unnecessary barriers to the operation of ADS-equipped commercial vehicles in interstate commerce
- Provide funding for ADS-focused demonstrations, pilots and deployments
- Update infrastructure standards to reflect ADS technologies



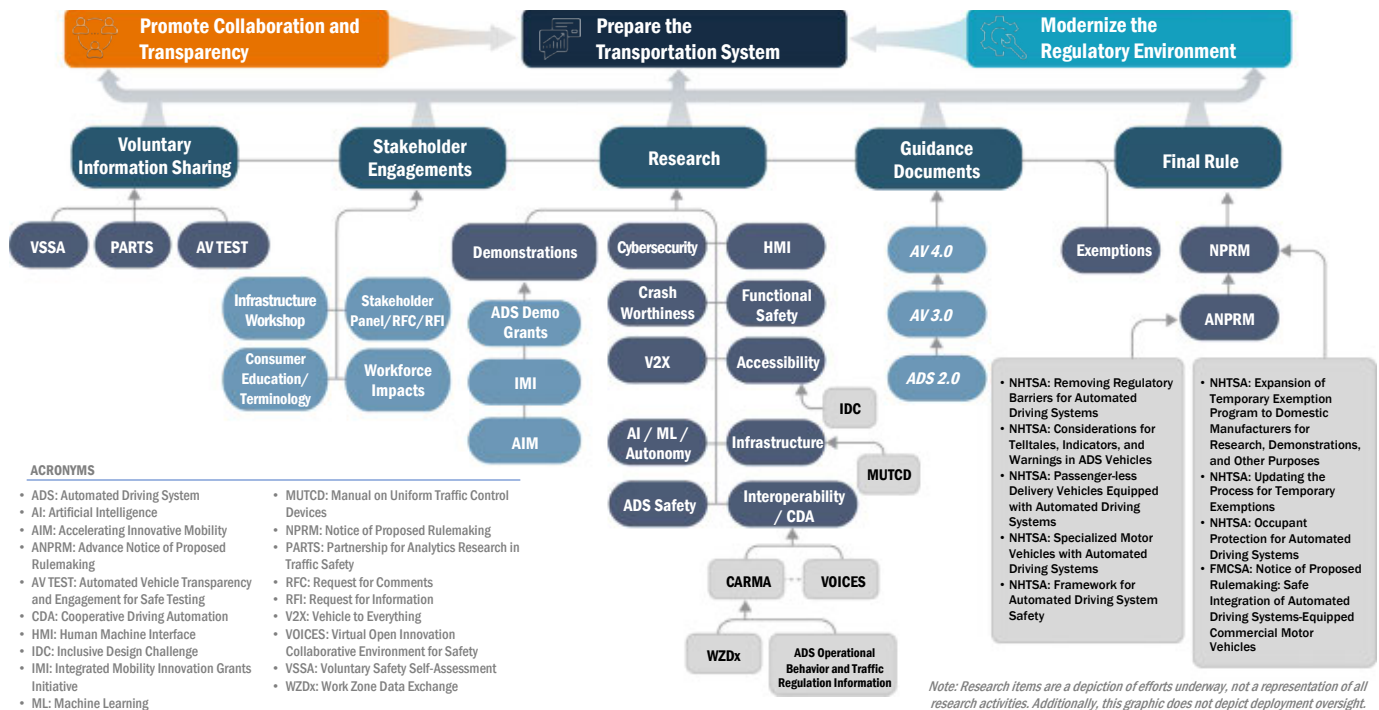
Following the release of the Department of Transportation's Automated Vehicles Comprehensive Plan, the National Highway Traffic Safety Administration approved a final rule to modernize numerous Federal Motor Vehicle Safety Standards in order to better align with autonomous vehicle designs. The rule amends several crashworthiness regulations to clarify safety standards for automated vehicles not equipped with manual driver controls. The rule also exempts automated vehicles designed to never carry any human occupants, including human drivers, from crashworthiness standards. The final rule does the following:

- Changes to the terminology used in the standards found in all 200-Series FMVSSs to better align with autonomous vehicle designs. The changes to nomenclature provide clarity about how the crashworthiness of the FMVSS is applied to ADS-equipped vehicles, and seek to remove unintended and unnecessary barriers to vehicle designs.
- Changes to special references in 200-Series FMVSSs, such as references to the "driver's seat," and "steering controls", in order to describe where these items within the vehicle are located.

- Clarifications regarding how the 200-Series FMVSSs apply to vehicles that can be operated by both ADS and by a steering control (dual-mode vehicles), and how some test procedures pertain to vehicles that do not have components referenced therein (e.g., a manual parking brake mechanism).
- Achieves an objective of the Agency with regards to "occupant-less vehicles," by tailoring the 200-Series FMVSSs to exclude vehicles that are intended to not have human occupants.
- Amendments to terminology used in certain FMVSSs, specifically FMVSS No. 208 as a critical subject, as many of the performance 22 requirements of this standard were written in reference to driver and passenger seating positions. The rules consider the impact of the removal of the term "driver."
- Several other minor FMVSS amendments.

Notably, this is just the latest move from the Department of Transportation in regard to federal regulations.

In late 2019, both the National Highway Traffic Safety Administration (NHTSA) and Federal Motor Carrier Safety Administration (FMCSA) concluded public



Source: Department of Transportation's Automated Vehicles Comprehensive Plan.



Vehicle and Vehicle Systems

Vehicle Cybersecurity

1



Vehicle Development Process

2 3 4 5 6 7 8 9 10

Automated Driving System and Subsystems

Perception and Situational Awareness

11 12

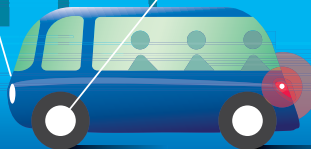


ADS Testing

16 17

ADS - General

13 14 15



ADS Human-Machine Interface

18 19

Overall ADS Safety

20



ADS HUMAN-MACHINE INTERFACE

18. AVSC00003202006: AVSC Best Practice for Passenger-Initiated Emergency Trip Interruption
19. SAE J3114: Human Factors Definitions for Automated Driving and Related Research Topics

OVERALL ADS SAFETY

20. UL4600: Standard for Safety for the Evaluation of Autonomous Products

*Recently published NHTSA research explored the potential applicability of SAE AS5553A - originally developed for the aerospace industry - to the automotive sector (see Bielawski, R., Gaynier, R., Ma, D., Lauzon, S., & Weimerskirch, A. (2020, October). *Cybersecurity of Firmware Updates* (Report No. DOT HS 812 807). National Highway Traffic Safety Administration (https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/cybersecurity_of_firmware_updates_oct2020.pdf)). Note that this standard has been updated to SAE AS5553C subsequent to the completion of the research and analysis conducted to inform this report.

VEHICLE CYBERSECURITY

1. ISO 21434 (forthcoming): Road Vehicles - Cybersecurity Engineering

VEHICLE DEVELOPMENT PROCESS

2. ISO 26262: Road Vehicles - Functional safety
3. ISO 15288: Systems and software engineering System lifecycle processes
4. ASPICE 3.0: Automotive Software Process Improvement and Capability Determination (ASPICE)
5. AUTOSAR: Automotive Open System Architecture (AUTOSAR)
6. IATF 16949/ISO 9001: International Standard for Automotive Quality Management Systems
7. MIL-STD-882E: Standard Practice for System Safety
8. SAE J2998: Model Description Documentation Recommended Practice for Ground Vehicle System and Subsystem Simulation
9. SAE J3049: Model Architecture and Interfaces Recommended Practice for Ground Vehicle System and Subsystem Dynamical Simulation
10. SAE AS5553A: Fraudulent/Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition*

PERCEPTION AND SITUATIONAL AWARENESS

11. ISO/PAS 21448 SOTIF: Road Vehicles -- Safety of the Intended Functionality
12. SAE J3088: Active Safety System Sensors

ADS - GENERAL

13. SAE J3016: Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles
14. AVSC00002202004: AVSC Best Practice for Describing an Operational Design Domain: Conceptual Framework and Lexicon
15. SAE J3197: Automated Driving System Data Logger

ADS TESTING

16. SAE J3018: Guidelines for Safe On-Road Testing of SAE Level 3, 4, and 5 Prototype Automated Driving Systems
17. AVSC00001201911: AVSC Best Practice for safety operator selection, training, and oversight procedures for automated vehicles under test

Source: Department of Transportation's Automated Vehicles Comprehensive Plan.



Spotlight

Cruise Begins Testing Self Driving Cars in San Francisco

Cruise, an AV subsidiary of General Motors, began testing fully driverless cars in San Francisco on December 2nd, 2020. This is the first time that Cruise has rolled out their AVs without human safety drivers. The scope of the test will be gradual, beginning in just one neighborhood before expanding outwards, and the DMV permit limits speeds to under 30 miles per hour. Still, this is an important milestone that marks yet another step for AV technology's transition from R&D to becoming a legitimate commercial product.

Although there will not be a human driver, each vehicle still has a safety operator who can stop the vehicle in the case of an emergency, but cannot drive or control the car. As Cruise continues its urban testing, these operators can be expected to be fully removed.

comment periods aimed at determining whether the rules and regulations currently in place are, collectively, obstacles to the effective rollout of autonomous vehicles. NHTSA requested comment on challenges concerning testing and compliance with Federal Motor Vehicle Safety Standards in vehicles that lack human controls. Similarly, FMCSA asked for comment on any Federal Motor Carrier Safety Regulation sections that may need to be "amended, revised, or eliminated" to facilitate the public deployment of commercial motor vehicles.

As a result of that public input process in May, NHTSA [released suggestions](#) of how to update 12 vehicle safety regulations to remove references to human-centric components. The report evaluates the regulatory text and test procedures with the goal of

identifying possible options to remove barriers for the compliance verification of ADS-dedicated vehicles (ADS-DVs) that lack manually operated driving controls. It also describes activities focused on six crash avoidance standards (FMVSS Nos. 102, 108, 114, 118, 138, and 141) and six crashworthiness standards (FMVSS Nos. 201, 202a, 203, 204, 205, and 206). There are 18 remaining FMVSS that NHTSA is planning on reviewing.

Additionally, the Federal Motor Carrier Safety Administration released a new plan to study how the commercial transport industry intends to integrate autonomous driving systems. The FMCSA solicited comments through January 4th on an information collection project titled *Trucking Fleet Concept of Operations (CONOPS) for Managing Mixed Fleets*. It is a survey study that will assess the self-reports of approximately 2,000 survey respondents, including commercial motor vehicle (CMV) fleet managers, CMV sales personnel, State and Federal government personnel, industry engineers, researchers, and CMV drivers. The questionnaire is designed to collect baseline opinions of automated driving systems (ADS) before and after hands-on demonstrations with ADS technologies. The data collection will coincide with large conferences, such as the Technology Maintenance Council (TMC) Annual Meeting, North American Commercial Vehicle Show, SAE COMVEC, and Automated Vehicle Symposium.

Without a new law or a significant rulemaking push, automakers will continue to be constrained by the FMVSS. These prescriptive standards define how nearly every component of a vehicle is designed and constructed. They address everything from the position of rearview mirrors to the need for power-operated windows. A significant number of the standards assume the presence of a human operator in the vehicle. For example, FMVSS specifies how components must react to a driver turning the wheel, pressing the brake pedal and engaging a turn signal, just three of the estimated 30-plus driver-specific vehicle requirements.

As vehicles become more advanced, many of the human controls will be unnecessary—and a burden



to innovative design. In 2015, Waymo requested an interpretation from NHTSA as to how the agency would treat a vehicle without human controls. NHTSA responded that it would accept the vehicle as the driver, but it could not interpret the lack of human controls as compliant with FMVSS.

On Thursday, November 19, the Department issued an **advanced notice of proposed rulemaking** requesting comments on a new generation of safety standards for autonomous vehicles. According to the NHTSA, “The framework would objectively define, assess, and manage the safety of ADS performance while ensuring the needed flexibility to enable further innovation.”

While the Agency notes that it may be premature for NHTSA to develop and promulgate a specialized set of FMVSS or other performance standards for ADS competency, it is clear the Agency would like to prepare for such an eventuality. As such, the notice, “marks a significant departure” from the Agency’s previous regulatory position because “NHTSA is looking beyond the existing FMVSS and their application to novel vehicle designs and is considering the creation of a governmental safety framework specifically tailored to ADS.” The document floats the idea of an “if-equipped” performance requirement regime where NHTSA would specify performance requirements specifically for those vehicles equipped with ADS. Any new framework is likely to borrow significantly from reports in recent years by DOT (i.e., ADS 2.0, Preparing for the Future of Transportation: Automated Vehicles 3.0 (AV 3.0), and Ensuring American Leadership in Automated Vehicle Technologies: Automated Vehicles 4.0 (AV 4.0)).

The deadline for public comments is January 19, 2021, meaning any further movement on developing a federal regulatory structure will be left to the Biden Administration. The direction of the Department of Transportation may change significantly depending on the perspectives of newly-appointed leadership.

In contrast to last year’s report, there is a level of uncertainty for the industry as the Trump administration is replaced by that of former Vice President Joe Biden. At the time of this writing, Pete Buttigieg, former South Bend Mayor and presidential candidate, is President-Elect Joe Biden’s choice to run the Department of Transportation. Buttigieg, during his presidential run, laid out a comprehensive infrastructure plan called “Building for the 21st Century: An Infrastructure plan to create jobs, increase resilience, and usher a new era of opportunity.” The Plan included \$165 billion for the Highway Trust Fund, paid for through a user-fee system (possibly a vehicle-miles traveled fee) to replace the gas tax. The document also called for the restoration of the Advisory Committee on Automation in Transportation which was disbanded by the Trump Administration. Moreover, he proposed that the National Highway Traffic Safety Administration take on a “strong federal role for regulation and oversight” to safely advance autonomy. Additionally, in a speech to African American county officials, Buttigieg said that automation will be a major emphasis for him, noting the need to plan policy for coming technologies especially in regard to land use and parking. “Communities could risk being left behind if they are not among those that prepare any things that need to be there,” he said.



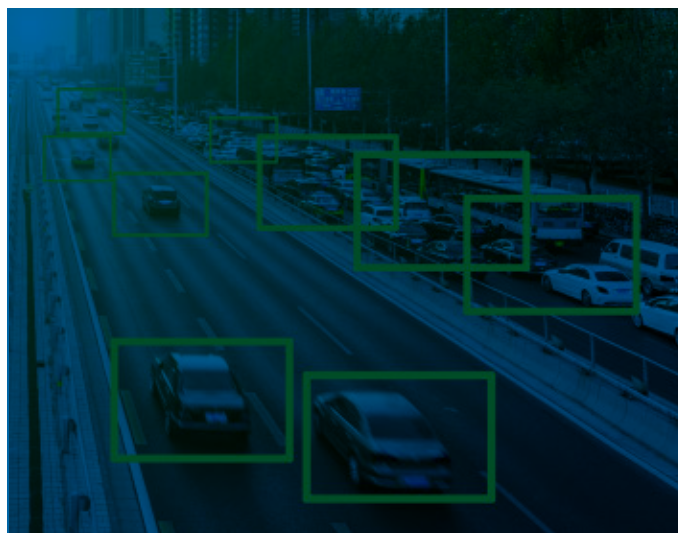
Pete Buttigieg

Former South Bend Mayor Pete Buttigieg

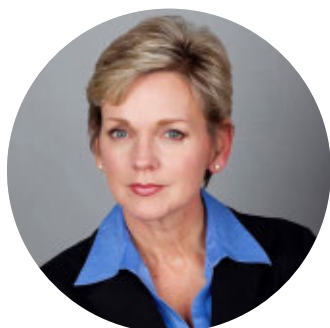
“Communities could risk being left behind if they are not among those that prepare any things that need to be there,” he said.



President-Elect Biden also named former Michigan Governor Jennifer Granholm to lead the Department of Energy. Granholm has strong connections to the auto industry and will take a lead position in the Biden administration's drive toward electrification of transportation. Biden promised on the campaign trail to build over a half a million EV charging stations and created one million clean energy jobs. Granholm worked with Biden on the 2009 bailout of automobile manufacturers General Motors and Chrysler, which included incentives for investments in car batteries. Notably, Granholm focused on the impact of autonomous vehicles on labor in a 2018 interview with the California Transit Association noting that "There has been a lot of speculation about what autonomous cars will do for drivers. There are about five million people that make their living driving (taxi, truck drivers, public transit operators, etc.). It's about three percent of the workforce. It has been described as about the same size as the decline in manufacturing jobs since 2000 and about as comparable of potential shock. That is really significant; it is a huge deal. And it is already starting to happen." The focus on labor is in line with the rhetoric and early policy proposals from President-Elect Biden who has always cast himself as a friend of labor.



Finally, with two victories in Georgia, Democrats now have control of the United States Senate. With control comes the power to shape any autonomous vehicle legislation in 2021. Expect that to impact the debate over safety, data privacy and liability in particular. In conclusion, while there is change on the horizon, at this point, it is clear that until a law is passed by Congress, rulemaking, guidance promulgation and state pre-eminence will define the autonomous vehicle industry's relationship with government in the United States.



Jennifer Granholm

Former Michigan Governor Jennifer Granholm

"There has been a lot of speculation about what autonomous cars will do for drivers. There are about five million people that make their living driving (taxi, truck drivers, public transit operators, etc.). It's about three percent of the workforce. It has been described as about the same size as the decline in manufacturing jobs since 2000 and about as comparable of potential shock. That is really significant; it is a huge deal. And it is already starting to happen."



US Road to Autonomy

2020 Recap

Passed Legislation

MARCH 2020

Washington

Washington passes House Bill 2676, which establishes minimum requirements for testing AVs, and necessitates the reporting of planned local testing and any collision accidents.



SEPTEMBER 2020

Florida

House Bill 1303 passes creating the Deering Park Stewardship District in Brevard and Volusia Counties. The bill calls upon local officials to provide a plan for integrating autonomous vehicles into the transit system.

Hawai'i

Governor David Ige signs House Bill 2590 into law, creating a pilot program within the Hawaii Department of Transportation to allow for autonomous vehicle (AV) testing on Hawaii public roads.



NOVEMBER 2020

Washington, DC

Mayor Bowser signs the Autonomous Vehicles Testing Program bill, approved by Congress just a few days later. The Act regulates the testing of autonomous vehicles on District roads through a testing program at the District Department of Transportation.

DECEMBER 2020

North Carolina

SB 739 goes into effect, signed by Governor Cooper, allowing autonomous delivery devices in pedestrian areas and on highways. Local governments can prohibit the operation of these devices within their jurisdictions as deemed necessary.

Introduced Legislation

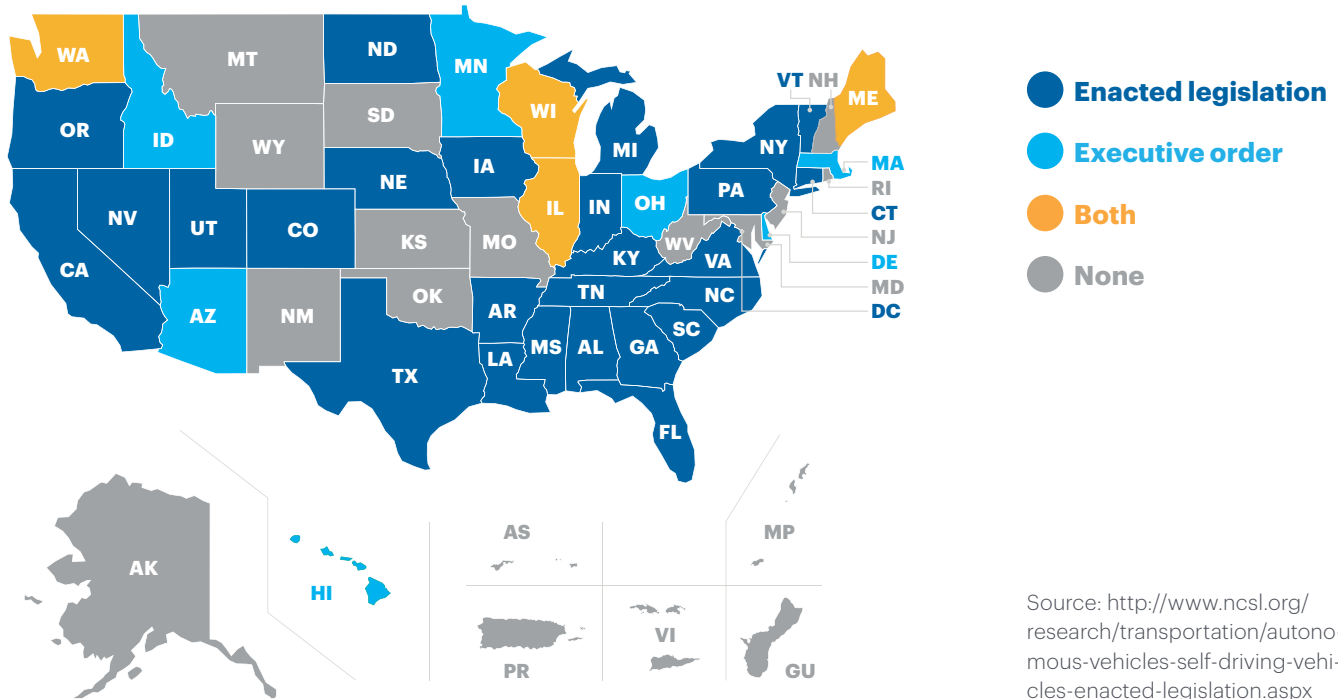
The following states introduced legislation related to autonomous vehicles in 2020

Alabama • Arizona • California • Florida • Hawai'i • Illinois • Iowa • Maine • Utah • Washington



State roundup

States with autonomous vehicles enacted legislation and executive orders



Source: <http://www.ncsl.org/research/transportation/autonomous-vehicles-self-driving-vehicles-enacted-legislation.aspx>

Alabama

Alabama has passed regulations on commercial autonomous vehicles (AVs) operating in the state. Vehicles can operate either with or without a physical driver as long as a remote driver is capable of operating the vehicle. The Department of Transportation (DOT) has sole and exclusive jurisdiction over automated driving systems, autonomous vehicles, and tele-operations systems. In 2017, the state senate created a Legislative Committee on Self-Driving Vehicles which was reauthorized in 2019.

In February of 2020, State Senator Gerald Allen introduced Bill 229 which would require any AV to be

approved by the Alabama State Law Enforcement Agency and the DOT before they can operate in the state. This bill would further require AVs to operate only on routes approved by the DOT. This bill is, as of this writing, pending in the Senate Transportation and Energy Committee.

Apart from the legal and regulatory movement, the University of Alabama at Birmingham School of Engineering launched a \$35 million research initiative for AVs, funded by the US Department of Defense and the US Army Combat Development Command Ground Vehicle Systems Center. The explicit goal of this effort is to fund the development of new combat vehicles to



provide expertise for the US military and NATO nations; however, it is also expected to advance AV technology for the civilian sector by providing much needed testing facilities to trucking and construction companies.

Bills Passed in 2019: Senate Bill 47, Senate Joint Resolution 21

Bills Introduced in 2020: House Bill 229

Bills Passed in 2020: N/A

Arizona

Arizona has one of the most permissive AV frameworks in the country, thanks to a series of executive orders signed by Governor Doug Ducey. Automakers need only to notify the Arizona Department of Transportation before testing, as long as their vehicles comply with state and federal laws governing motor vehicles. The welcoming nature of Arizona's regulatory structure has solidified its standing as a hotbed of AV innovation. Waymo has been testing in the state for years and recently expanded the service through a partnership with ride-sharing company Lyft.

Several Arizona cities this year have already launched ride-sharing AV programs on public roads. In February, Beep introduced its fully electric driverless shuttle to Peoria. In October, Waymo publicly opened its fully driverless ride-hailing service in suburban Phoenix, introducing more than 300 autonomous minivans. Both of these AV programs are limited to specific service areas within their respective cities, though both Waymo and Beep seek to expand.

Bills Passed in 2019: N/A

Bills Introduced in 2020: House Bill 2060, House Bill 2340

Bills Passed in 2020: N/A

(Note: House Bill 2007, which includes provisions regarding autonomous vehicle safety features, has been filed and is awaiting action in the state legislature. Similarly, House Bill 2032 which addresses autonomous vehicle safety features has been filed and is awaiting action in the state legislature. Finally, House Bill 2476 which would clarify the role of the ADOT in regulating autonomous vehicles is awaiting action in the state legislature).

Arkansas

Arkansas permits the operation of autonomous vehicles and fully autonomous vehicles on public streets and highways through an autonomous vehicle pilot program overseen by the State Highway Commission. The state imposed certain requirements for the autonomous vehicles pilot program and has granted authority to the Commission to adopt rules necessary for its implementation. Notably, the law authorizes the operation of up to three vehicles void of certain standard safety equipment at any given time. The state already allowed Driver Assistive Truck Platooning (DATP) under legislation that took effect in 2017.

Bills Passed in 2019: House Bill 1822, House Bill 1561

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

California

California has taken a comprehensive approach to regulating autonomous vehicles, enacting several laws that lay out procedures for the testing and deployment of driverless cars. The state expanded its program from requiring backup drivers in all test vehicles, to also allowing self-driving car tests without backup drivers. To qualify for a driverless testing permit, companies have to show proof of insurance or a bond equal to \$5 million, verify that the vehicles are capable of driverless operation, and meet Federal Motor Vehicles Safety Standards. As of now, over 60 companies currently hold permits to test in California.

In the last year, California initiated its first AV passenger service pilot program. Rather than just testing, passengers can now hail driverless rides from AVs. Additionally, California regulators approved a new permitting process that will allow companies to charge fees for autonomous vehicle rides, paving the way for AV commercialization in California. The decision, which was approved unanimously, requires applicants to first show proof of an active Department of Motor Vehicles permit before applying to the Public Utilities Commission for a commercial permit. All permit applications will be subject to a Commission Vote. Commissioner Genevieve Shiroma told Politico she expected firms to start applying



soon. At present, seven companies have received permits under the current framework which allows them to offer autonomous rides but not to charge fares. Notably, the Commission imposed several reporting requirements to target specific policy concerns including safety, accessibility, equity and environmental justice.

A few bills of note were introduced in 2020 including Assembly Bill 1964 which would expand the definition of the term autonomous vehicle to also include a remotely operated vehicle. The bill also specifies that a vehicle is not autonomous if it is only equipped with collision avoidance systems that are not capable of actually driving without the active supervision of a human operator in the vehicle. Additionally, Senate Bill 59 would create the California Council on the Future of Transportation to advise the Governor and Legislature.

Bills Passed in 2019: N/A

Bills Introduced in 2020: Assembly Bill 3116, Senate Bill 59, Senate Bill 336, Assembly Bill 516, Assembly Bill 1964

Bills Passed in 2020: N/A

Colorado

Companies seeking to test and operate autonomous vehicles in Colorado are greeted by a welcoming regulatory environment. Legislation enacted in 2017 allows driverless vehicles to be operated in the state as long as they are capable of complying with existing

state and federal law. Additionally, legislation passed in 2019 requires the State Department of Transportation to convene a working group to examine the impact of technology, including autonomy, on transportation business models. The group made their recommendation to the legislature in November 2019.

Colorado's Department of Transportation is partnering with Ford, Panasonic and Qualcomm to deploy Cellular Vehicle-to-Everything (C-V2X) technology along the heavily traveled Interstate 70 corridor, integrating vehicles into cellular networks to eventually provide collision avoidance capabilities and reduce congestion. In November of 2020, the FCC moved to authorize C-V2X access to the 5.9 GHz spectrum, allowing the technology to transmit basic messages to vehicles without worry over cellular coverage. This authorization should immediately make C-V2X more useful in integrating vehicles into larger networks. Although the state does not currently have any large-scale robo-taxi fleets, tech company EasyMile began testing a 15-passenger autonomous shuttle near the Denver Airport last year, and last June initiated a two-week AV food delivery test in the city of Westminster.

Bills Passed in 2019: Senate Bill 239

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A



Connecticut

Of the states that have passed autonomous vehicle laws, Connecticut has one of the strictest regulatory structures. Operators must go through a multistage approval process, and testing is only allowed in select municipalities, to be designated by the commissioner of the State Department of Transportation. As many as four municipalities have begun working with manufacturers such as French company Navya, applying for spots in the Fully Autonomous Vehicle Testing Pilot Program. Connecticut did loosen the reigns last year, if only nominally, by removing the requirement that test drivers must be seated in the driver's seat while testing the vehicle. Instead, it states that the operator must be physically inside the AV in order to engage the system. The state has also established a task force to study fully autonomous vehicles.

Connecticut hoped to launch an automated electric bus program through CTfastrak in 2020, but the program has been instead rescheduled for deployment in 2021.

Bills Passed in 2019: Senate Bill 924

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Delaware

Governor John Carney signed an executive order to establish an Advisory Council on Connected and Autonomous Vehicles. The Advisory Council was tasked with developing recommendations for innovative tools and strategies that can be used to prepare Delaware's transportation network for connected and autonomous vehicles. The Advisory Council's final report was submitted in September 2018. The report has not spurred any successful legislation to this point.

Bills Passed in 2019: N/A

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Florida

Florida was one of the first states to welcome the AV industry to test on its streets, and it has continued to be a leader in driverless technology adoption. Autonomous vehicle companies see Florida's growing and aging population as an ideal place to test commercialization.

In 2019, Florida relaxed its laws to allow for AV testing on public roads without a human operator in the vehicle. Within days, a Starsky Robotics 18-wheeler was on the highway with no one at the wheel in the midst of Sunday morning traffic. Notably, Florida has the third most truck drivers in the United States, behind Texas and California. Automating truck driving will be an important turning point for not just Florida's economy, but also for its labor force.

This year, in Jacksonville, autonomous shuttles were used to move COVID-19 tests between testing sites and a Mayo Clinic processing location. However, the shuttles were still isolated from pedestrians, traffic, and staff, and were each trailed by a human-driven SUV.

The State of Florida has also taken steps to incentivize and fund innovative research. The state appropriated \$2.5 million for the Tampa Bay Regional Transit Authority, with \$1 million dedicated to the study and development of innovative options for transit, as well as established the Multi-use Corridors of Regional Economic Significance Program within the department of transportation.

Finally, in 2020, House Bill 4713 was vetoed by Governor DeSantis. The legislation would have provided an appropriation for the Autonomous Transit AV Technology, Workforce and Economic Opportunity Project.

Bills Passed in 2019: House Bill 311, Senate Bill 2500, Senate Bill 7068

Bills Introduced in 2020: House Bill 771, House Bill 4713

Bills Passed in 2020: House Bill 1303

(Note: Senate Bill 54 which makes changes to motor vehicle insurance law is currently pending in the state legislature.)





Georgia

Georgia allows the operation of both autonomous vehicles and trucks under legislation passed in 2017. Driverless vehicles are free to operate in the state as long as they are fully insured and lawfully registered. At present, no robo-taxi services are operating in the state, however, several autonomous shuttle projects are in their infancy, including an autonomous shuttle that traverses a 1.5 mile track in the Peachtree Corners Curiosity Lab.

In the beginning of 2020, Georgia deployed next-gen highway striping on a strip of highway that would accommodate AV technology. The strip, called “The Ray,” is an 18-mile stretch of I-85 in southern Georgia that will help test highway technologies, including a network of six roadside units capable of communicating with AVs. The pilot uses “CIRRUS by Panasonic,” and is described as a “vehicle to everything” (V2X) system, already in use in other locations in Utah and Colorado.”

Bills Passed in 2019: N/A

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Hawaii

On September 15th, 2020, Governor David Ige signed House Bill 2590 into law, creating a pilot program within the Hawaii Department of Transportation to allow for autonomous vehicle (AV) testing on Hawaii

public roads. The law, which represents an important step for AVs in Hawaii, requires that a conventional human driver be physically present in the vehicle at all times to supervise the vehicle and prevent collision if necessary. Both Governor Ige and Ed Sniffen, the HDOT Deputy Director for Highways, are optimistic that Hawaii will become a leader in the AV industry. The passage of the law was due, in no small part, to the efforts of the Hawaii Autonomous Vehicle Legal Task Force which included Dentons Partner Bill Kaneko. The Task Force encouraged the Hawaii State Legislature to enact legislation to account for AVs.

In August 2020 the University of Hawaii began working with the Hawaii Department of Transportation to implement a “Vehicle-to-Everything” communication technology. The system will be testing connected autonomous vehicles (CAVs) in conjunction with traditional drivers, bikers, and pedestrians in order to improve vehicle data collection, intersection safety, and efficiency along the Nimitz Highway and Ala Moana Boulevard corridor. The research program received \$6 million in funding and aims to provide valuable data to expedite the integration of AVs into dynamic urban environments.

Hawaii, being an island state, is uniquely positioned to roll out cutting-edge, transformative AV projects. The combination of an insulated traffic environment, relatively short commuting routes, a comparatively small population, and a limited number of weather and



road variables make Hawaii an attractive AV testing environment. We expect the passage of the new law, paired with existing investments in connected transit technology, to increase interest in the state among autonomous vehicle manufacturers.

Previously, Governor Ige signed Executive Order 17-07, stating that Hawaii is “open for business for testing and deploying new driverless vehicles.”

Bills Passed in 2019: House Concurrent Resolution 220

Bills Introduced in 2020: Senate Bill 620, House Bill 1183, House Bill 1725, Senate Bill 3060

Bills Passed in 2020: House Bill 2590

Idaho

Idaho Governor C.L. “Butch” Otter signed Executive Order 2018-01 on January 2, 2018 to create the Autonomous and Connected Vehicle Testing and Deployment Committee to identify relevant state agencies to support the testing and deployment of autonomous and connected vehicles.

The Committee submitted its report in November 2018. The report has not yet spurred any successful legislation to this point.

Bills Passed in 2019: N/A

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Illinois

Both Illinois and Chicago officials have been slower than some other states to adopt AV technology. While Illinois has no legislation directly regulating autonomous vehicles, an executive order signed by former Governor Bruce Rauner allows their operation in the state. The order establishes the Autonomous Illinois Testing Program, overseen by the state Department of Transportation. Vehicles can only be operated with an employee of the manufacturer behind the wheel.

“We want testing to happen here in Illinois, but we want to do it safely,” said Illinois Transportation Secretary Randy Blankenhorn in 2018. Since then, Illinois has maintained its relative hesitance towards AVs.

In 2019, House Bill 2575 was introduced, which would allow fully autonomous vehicles to drive on state highways with or without a human operator. However, as of 2020, the bill remains pending.

Bills Passed in 2019: N/A

Bills Introduced in 2020: House Bill 2575, Senate Bill 3204, House Bill 4758

Bills Passed in 2020: N/A

(Note: Senate Bill 3204 which would create an automated work zone vehicle pilot program and defines remote autonomous vehicle operator is pending in the state legislature.)

Indiana

Indiana currently has no laws or regulations concerning autonomous passenger vehicles; however truck platooning is regulated under 2017 legislation. There have been efforts in the past to create an autonomous task force with the power to approve operation of fully driverless vehicles in the state, but all have failed to garner enough support to pass into law.

Bills Passed in 2019: N/A

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Iowa

Iowa allows driverless vehicles to operate on the public highways without a conventional human driver physically in the vehicle if it meets a set of conditions, including that the vehicle is capable of achieving a minimal risk condition in the event of a malfunction and that the vehicle is capable of operating in compliance with the



applicable traffic and motor vehicle safety laws and regulations. In 2019, Iowa passed Senate File 302 that establishes more regulation for AV vehicles, including terms for insurance and liability, and penalties. Iowa also authorizes on-demand driverless-capable vehicle networks, to facilitate the transportation of persons or goods, including transportation for hire.

The University of Iowa was awarded a portion of the \$60 million in federal grant funding allocated for automated driving systems research for its ADS for Rural America project. In 2021, this grant is slated to be used for a project for driving autonomous vehicles on rural roads in the midwest.

Bills Passed in 2019: Senate File 302

Bills Introduced in 2020: Senate Bill 1128, House Bill 122

Bills Passed in 2020: N/A

Kansas

In 2018, the Kansas Department of Transportation created the Statewide Connected and Autonomous Vehicle Task Force to increase awareness and educate state agencies on the process of deploying CAV systems in Kansas. Kansas seeks to develop policies and investments incrementally, likely beginning with agricultural vehicles, freight trucks, ride-hailing, and transit vehicles. However, Kansas has not yet legislatively defined how and when AVs can be tested, deployed, or operated. In the last year, Kansas still has not introduced any AV legislation.

Bills Passed in 2019: N/A

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Kentucky

Kentucky has set forth rules for commercial vehicle platooning including exempting any vehicles engaged in a platoon from “following too closely” laws. In 2018, Kentucky allowed commercial vehicles to operate in a platoon, but for each vehicle there must be a licensed driver behind the wheel and a marking designating that it’s part of a platoon. Former Governor Bevin, at the urging of the Kentucky Aerospace Industry Consortium,

verbally supported the launch of “Elevate Kentucky,” an initiative to establish Kentucky as an autonomous vehicle testing hotbed. That being said, no legislative efforts have come to pass on autonomous passenger vehicles.

Bills Passed in 2019: N/A

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Louisiana

In 2019, Louisiana passed legislation governing the operation of autonomous freight carriers and other autonomous commercial vehicles. Louisiana law allows for the operation of both autonomous vehicles and autonomous truck platoons and specifically authorizes autonomous commercial motor vehicles to operate without a conventional driver physically present in the vehicle if the autonomous commercial motor vehicle meets a set of criteria including that the vehicle is capable of operating in compliance with applicable law and is capable of achieving a minimal risk condition in the event of an emergency.

The State of Louisiana recognizes the need to plan for AV integration, and is currently engaged with Arcadis and partners including California-based Iteris, Inc. and Texas-based Alliance Transportation Group Inc. to plan the integration of CAV technology into highway infrastructure.

Bills Passed in 2019: House Bill 455

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Maine

Maine does not currently have any laws or regulations pertaining to autonomous vehicles. However, 2018 legislation authorized the creation of a Commission on Autonomous Vehicles to coordinate efforts among state agencies and knowledgeable stakeholders to develop a process for testing automated driving systems on public roads. The law requires that the Commission issue a final report containing findings and recommendations, including suggested legislation.



In addition, Governor Paul LePage signed an executive order creating the Maine Highly Automated Vehicles (HAV) Advisory Committee to oversee the introduction of highly automated vehicles. The committee is tasked with making recommendations regarding proposed HAV Pilot Projects and handling applications for permits to operate pilot vehicles on public roadways in Maine.

In 2020, House Bill 1222, the Automated Driving Safety Act also failed to pass Maine's legislature—Maine still has no standards for the registration of AVs nor for the licensure of AV operators.

Bills Passed in 2019: House Bill 455

Bills Introduced in 2020: House Bill 1222 (LD 1710)

Bills Passed in 2020: N/A

Maryland

While Maryland doesn't have any laws explicitly governing autonomous vehicles, the state Department of Transportation has adopted regulations for their operation, including an approval process requiring operator self-certification and insurance coverage of \$5 million. AV developers can apply for and receive permits to test on Maryland roads as well as on designated testing grounds. However, these testing facilities are all controlled, closed environments—parking lots, paved surfaces, and test courses isolated from the general public.

Bills Passed in 2019: House Bill 455

Bills Introduced in 2020: House Bill 1464

Bills Passed in 2020: N/A

Massachusetts

A 2017 executive order issued by Governor Charlie Baker enumerated extensive requirements for the operation of autonomous vehicles in the state, including setting maximum speeds and confining them to geo-fenced areas determined during the application process. Boston-based nuTonomy and Optimus Ride have already had access to all of Boston's roads for over a year, and over 15 municipalities have signed agreements with the state allowing for testing.

Spotlight

University of Michigan DOT Grant

The University of Michigan was awarded a federal grant of \$9,950,098 for self-driving technology research and development. The funding was awarded through the Department of Transportation and will be used to support ongoing projects to install vehicle and infrastructure technology at intersections across Ann Arbor.

A previous executive order established a working group on AVs which is expected to work with experts on vehicle safety and automation and members of the legislature on proposed legislation, recommending that the Massachusetts DOT continue to facilitate testing with.

Bills Passed in 2019: N/A

Bills Introduced in 2020: Senate Bill 2056, Senate Bill 2115, House Bill 3013, House Bill 3089, House Bill 3143, House Bill 3672, House Bill 3099, House Bill 5028, HB 5080

Bills Passed in 2020: N/A

Michigan

As the home of the nation's auto manufacturing industry, it's no surprise that Michigan is one of the nation's leading AV testing hubs. In 2016, the state approved legislation allowing for pilot testing. Waymo announced plans to resume self-driving tests and to locate the nation's first factory dedicated to the manufacture of autonomous vehicles in Detroit. The state is also home to several large testing facilities including the University of Michigan-owned Mcity, a 32-acre mock city and proving ground built for the testing of driverless cars that contains over four miles of roadway fitted with connected-vehicle infrastructure. These projects were funded in part by the \$60 million federal grant allocation for automated driving systems research for its Michigan Mobility Collaborative.



Michigan has expanded plans for future AV infrastructure and integration. In August 2019, Michigan announced a plan to retrofit 40 miles of highway, including the I-94 and Michigan Avenue, connecting Detroit and Ann Arbor specifically for AVs. The details of how and what infrastructure changes will be made are still up in the air, so there will be incremental scaling tests conducted over the next two years to gauge the viability of the project. If the testing shows substantive improvements to congestion and transit efficiency, then the project is slated to proceed. Initial project partners include Ford Motor Company, the University of Michigan, and the American Center for Mobility.

Michigan has also passed several laws dealing with liability in relation to autonomous vehicles.

Bills Passed in 2019: N/A

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Minnesota

Minnesota has no laws or regulations specifically addressing autonomous vehicles. According to the state's Department of Transportation, any automated vehicles operating in the state must adhere to "current statute and laws." However in 2018, Governor Mark Dayton signed an executive order creating a Governor's Advisory Council on Connected and Automated Vehicles to recommend a path forward. Its resulting 66-page report delivered a rosy outlook on automated cars and included draft legislation setting up a permit system and giving the state DOT wide latitude to decide whether to allow a business to test based on its history with self-driving technology. Furthermore, the Minnesota Department of Transportation has expressed interest in connected autonomous vehicle technology, though there are no current CAV pilot projects being conducted. The Minnesota Legislature has yet to decide the issue, though they express safety concerns for public testing and deployment.

Minnesota has passed legislation regarding platooning on freeways and expressways. A platooning system

may only be used if a plan has been approved by the Commissioner of Transportation, who must consult with the Commissioner of Public Safety prior to approving the plan.

Bills Passed in 2019: House Bill 6

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

(Note: Minnesota House File 230 and Senate File 315 which would establish micro-transit programs with requirements to incorporate autonomous vehicles have been introduced and are awaiting action by the state legislature.)

Mississippi

Mississippi has yet to pass legislation concerning autonomous passenger vehicles. However, the state does permit platooning as long as the operator receives approval from the Department of Transportation and the Department of Public Safety.

In August 2019, Michigan announced a plan to retrofit 40 miles of highway, including the I-94 and Michigan Avenue, connecting Detroit and Ann Arbor specifically for AVs.

Bills Passed in 2019: N/A

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Missouri

Missouri does not have any laws regarding the registration, testing, and deployment of autonomous vehicles. Currently, there is a pending bill, HB 2059, that would prohibit driverless truck operations from using roadways within the state. Specifically, it would forbid vehicles from being autonomously driven without a licensed operator in the vehicle at all times. In the past few years, several bills regarding Connected Vehicle



Technology, AV Platooning, and driverless testing have been introduced; however, all of them failed.

Bills Passed in 2019: N/A

Bills Introduced in 2020: HB 2059

Bills Passed in 2020: N/A

Montana

Montana currently has no laws or executive orders governing AVs. Since AVs have never been specifically addressed, they are not explicitly prohibited. In 2017, public officials expressed interest in bringing self-driving cars to major cities like Missoula, but nothing has come of this as of yet.

Bills Passed in 2019: N/A

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Nebraska

In April 2018, Nebraska lawmakers cleared the way for companies to test self-driving vehicles as long as the vehicle is capable of operating in compliance with traffic and motor vehicle safety laws. The AV may or may not contain a human driver, but if a human driver is present, he or she must be a licensed driver and covered by insurance. The law also authorizes the operation of an on-demand AV network for the transport of persons or goods, including for-hire transportation or public transportation.

Bills Passed in 2019: N/A

Bills Introduced in 2020: L 521, L 142

Bills Passed in 2020: N/A

Nevada

Ever since Nevada passed AV legislation in 2012, the state has been at the forefront of driverless vehicle innovation. In 2017, with the passage of Assembly Bill 69, Nevada permitted the testing and commercial public deployment of AVs—later that year, Las Vegas had its first completely autonomous electric shuttle deployed for public use. In

2019, the AV startup Zoox received permission from the Nevada Department of Motor Vehicles to deploy AVs on state roads. In 2017, the University of Nevada, Reno also installed a LiDAR sensor at one of its entrances to begin facilitating the development of smarter and safer transportation infrastructure. This October, that project was expanded by the Regional Transportation Commission of Washoe County and its Virginia Street redevelopment, adding eight new LiDAR sensors. These sensors will expand safety analyses to crashes and near-crashes, supplementing traditional methods of traffic data collection. In the future, these sensors will be crucial in establishing connected safety technology systems that will feed AVs real-time information about road and traffic conditions.

State law permits the operation of fully autonomous vehicles without a human operator in the vehicle and specifies that the original manufacturer is not liable for damages if a vehicle has been modified by an unauthorized third party. A publicly available robo-taxi network—a partnership between AV company Aptiv and ride-sharing company Lyft—is currently operating in the state.

Bills Passed in 2019: Assembly Bill 23

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

New Hampshire

After previously vetoing a bill to permit autonomous vehicle testing in New Hampshire, in 2019 Governor Chris Sununu signed into law a bill that creates an automated vehicle testing pilot program in New Hampshire. The new law creates an autonomous vehicle advisory commission, a testing pilot program and sets requirements for vehicle deployment. The new pilot program permits testing on public roads.

Bills Passed in 2019: Senate Bill 216

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A



New Jersey

At the beginning of 2019, New Jersey established an 11-member tasked force called the New Jersey Advanced Autonomous Vehicle Task Force to study autonomous vehicles and recommend laws, rules and regulations that New Jersey may enact to integrate autonomous transportation into the state's transportation system. However, over a year later, New Jersey still has nothing permitting or specifically prohibiting autonomous vehicles. Companies have expressed interest in using AVs to ensure contactless delivery and proper social distancing during the COVID crisis, but nothing has come of this as of yet. Several bills have been introduced in the past concerning AV legislation, ranging from issues on the establishment of an AV pilot program (A 1189), the testing of AVs on state roadways (A 1607), to requiring the establishment of training programs to prepare law enforcement for interaction with AVs (A 2807).

Bills Passed in 2019: AJR 164

Bills Introduced in 2020: A 1187, A 1189, A 1607, A 2807, S 2129

Bills Passed in 2020: N/A

New Mexico

In 2018, New Mexico requested the DOT create a committee to review the state of AVs to develop a proposal to allow their use in New Mexico; however, there is still no legislation or executive order governing AVs in New Mexico. Since there are no laws specifically prohibiting AVs, Waymo at the beginning of 2020 chose New Mexico interstate roadways, such as I-10, I-20, and I-45, to test self-driving minivans and long-haul trucks. During this testing phase, a human operator remained in the driver's seat at all times. In September, Daimler Trucks and allied vehicle software company Torc Robotics joined Waymo in expanding their testing of self-driving trucks on New Mexico public roads.

Bills Passed in 2019: N/A

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

New York

New York has highly restrictive regulations on AV testing. Under legislation approved in 2017, any testing must be approved by the commissioner of the Department of Motor Vehicles, supervised by the New York State Police, and levied with significant hourly and per mile rates. There have been self-driving shuttle programs in the city, like Optimus Ride, but they are small in scope—limited to the Brooklyn Navy Yard and away from public roads. Because of these restrictions and safety concerns over its dense urban environment, New York is not expected to see wide-spread AV expansion any time soon.

While more relaxed requirements were proposed in previous legislative sessions, they failed to pass. New York lawmakers have insisted on ensuring public safety first and an open testing environment second. Additionally, the New York Bar Association established The Task Force on Autonomous Vehicles to investigate how the law should adapt to the rise in autonomous vehicles. There was a slate of bills introduced in 2019 regarding AV testing and relaxing the requirement for a driver to have their hand on the steering wheel for AVs, but they all remain pending. Dentons Senior Counsel Ronald Hedges is a member of the task force.

Bills Passed in 2019: N/A

Bills Introduced in 2020: SB 65, A 301, SB 1159, A 1554, SB 1779, A 1808, A 2643, SB 6014, A 7980, A 8460

Bills Passed in 2020: N/A

(Note: On January 6, 2021 Assembly Bill 639 was introduced which would require the Department of Labor to study the impact of autonomous vehicles on employment. Additionally, two AV bills, Senate Bills 6014 and 6052 have been committed to the Rules committee as of December 28, 2020)

North Carolina

Autonomous vehicles in North Carolina face few restrictions. A 2017 law established regulations for the operation of fully autonomous motor vehicles on public highways of the state, including the establishment of the Fully Autonomous Vehicle Committee to study the issue. Notably, the legislation specifies that AVs can be



operated without a driver license. Notably, the North Carolina Turnpike Authority (NCTA) has touted Triangle Expressway near Raleigh as one of the most advanced roads in the country, with a fiber-optic network along its entire length to facilitate connected infrastructure. The NCTA has tested several driverless vehicles along the corridor. In February of 2020, the first fully autonomous vehicle arrived on North Carolina University's Centennial Campus—EasyMile's EZ10, a driverless electric shuttle. The vehicle is designed to address the first-mile/last-mile problem in public transit, and does not require any special road infrastructure to operate.

In 2020, Governor Cooper signed SB 739 into law, allowing autonomous delivery devices in pedestrian areas and on highways. Local governments can prohibit the operation of these devices within their jurisdictions as deemed necessary. The bill was not effective until December 1, 2020.

Bills Passed in 2019: N/A

Bills Introduced in 2020: N/A

Bills Passed in 2020: SB 739

North Dakota

North Dakota permits autonomous vehicle operation as long as the vehicle is capable of operating in compliance with all applicable federal and state law. State law does not require a human driver to operate on the public highway if the autonomous vehicle is capable of achieving a minimal risk condition in case of a system failure. The law permits on-demand autonomous vehicle networks to provide transportation of persons or goods.

North Dakota also allows for truck platooning subject to the Department of Transportation, in coordination with the state highway patrol superintendent, developing an operational plan that provides guidelines for operation. The plan must include operational information that must be provided by a platoon technology provider or commercial motor vehicle operator.

At the beginning of 2020, the North Dakota Department of Transportation (NDDOT) received a federal grant to use AVs to improve work zone safety. In October, the NDDOT used this \$241,687 grant to

convert a current NDDOT truck into an autonomous truck, a development in partnership with Kratos Defense and Royal Truck & Equipment. This vehicle is controlled and monitored by a human operated lead vehicle, and automatically follows behind construction equipment without putting a driver in danger.

Bills Passed in 2019: House Bill 199, House Bill 1418

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Ohio

There are no laws in Ohio governing AVs, but there are relevant executive orders (EO) signed by former Governor John Kasich in 2018. The first EO created DriveOhio, a new division of the state DOT that allows any company to test AVs in the state so long as they register with DriveOhio and have a human operator behind the wheel. Four cities—Columbus, Dublin, Athens and Marysville—have already signed agreements with DriveOhio to test AVs on their streets, and the state has designated a 35-mile stretch of US Route 33 a “Smart Mobility Corridor” for the deployment of connected vehicle technologies. A \$45 million SMART Testing center opened in Logan County funded by a partnership between Ohio State University and the state of Ohio, will include an indoor highway track capable of simulating ice and snow year-round. The second EO created regulations for testing self-driving vehicles in the state.

The Ohio Department of Transportation was awarded a portion of the \$60 million in federal grant funding allocated for automated driving systems research for its D.A.T.A In Ohio: Deploying Automated Technology Anywhere project.

This year introduced a couple of new AV projects that seek to expand AV testing in Ohio. In February 2020, the first public residential autonomous shuttle fleet was launched in the suburbs of Columbus. Furthermore, Waymo announced in December 2020 that they would open a new mock-city testing ground that would simulate a dense urban environment. Moreover, Governor DeWine signed executive order 26D which among other things, directs the state departments of transportation, public safety and administrative services to develop plans to



deploy smart communications technology in all state fleet vehicles within the next four years.

Bills Passed in 2019: EO26D

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Oklahoma

Oklahoma hasn't passed legislation to establish specific autonomous vehicle regulations but has asserted in SB 365 that only the state may enact laws or regulations on autonomous driving systems, pre-empting the jurisdiction of local legislation. The state has also exempted platoons from certain traffic laws. In 2019, the legislature proposed the Self-Driving Vehicle Reform Act, House Bill 1866.

Bills Passed in 2019: SB 365

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Oregon

Oregon has no current regulations in place concerning autonomous vehicles. However, House Bill 4063, signed by Governor Kate Brown on April 10, 2018, named the Oregon Department of Transportation (ODOT) the state's lead agency on automated vehicle policy and directed ODOT to facilitate a task force on automated vehicles. The Task Force submitted its first report to the legislature on September 10, 2018 and its second on September 9, 2019. The task force voted to continue meeting on an ad hoc basis in response to significant developments in automated vehicle technology and policy. The task force dissolved on January 2, 2021. There was a piece of legislation introduced in 2019 that would permit the testing of AVs on highways, but it ultimately failed.

Bills Passed in 2019: N/A

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Pennsylvania

Pennsylvania law does not explicitly regulate autonomous vehicle testing, but the state Department

of Transportation has created a voluntary registration process. Additionally, Pennsylvania has established regulations on truck platooning and created the Highly Automated Vehicle Advisory Committee within the Pennsylvania Department of Transportation. The Committee is required to submit a report annually. The currently pending HB 1078 establishes general provisions for AVs and associated penalties.

Pittsburgh, thanks, in part, to local government incentives, has become a hotbed of AV testing. Currently companies including Aptiv, Argo AI and Aurora Innovation are testing in the city, and Argo recently announced a five-year, \$15 million research partnership with Carnegie Mellon University to conduct advanced research in autonomous vehicle technology.

The Pennsylvania Department of Transportation was awarded a portion of the \$60 million in federal grant funding allocated for automated driving systems research for its Safe Integration of Automated Vehicles (AV) in Work Zones project.

Pittsburgh, thanks, in part, to local government incentives, has become a hotbed of AV testing.

Bills Passed in 2019: N/A

Bills Introduced in 2020: HB 1078

Bills Passed in 2020: N/A

South Carolina

South Carolina has yet to pass legislation on autonomous passenger vehicles, but it has exempted platoons from certain traffic laws.

Bills Passed in 2019: N/A

Bills Introduced in 2020: HB 1078

Bills Passed in 2020: N/A

South Dakota

South Dakota has directed the Transportation Commission to promulgate rules to authorize the testing and operation of platooning at electronically coordinated



speed and distance intervals that are closer than otherwise allowed under the “following too closely” laws in the state.

Bills Passed in 2019: House Bill 1068

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Tennessee

Legislation passed in 2017 allows certified autonomous vehicles to operate in the state, provided they contain automatic crash recording and notification technology. The law also preempts local regulation of ADS-operated vehicles and specifies that the ADS shall be considered a driver for liability purposes when it is fully engaged and operated properly. The TennSmart consortium, made up of government agencies, universities, and companies with ties to the state, hopes to encourage collaboration and innovation in the AV area.

Bills Passed in 2019: N/A

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Texas

Texas’ AV-friendly regulatory environment has made the state a magnet for autonomous vehicle testing. Companies like Ford Motor Co. have begun testing AVs in Texas cities like Austin, running vehicles in full-autonomous mode with two safety drivers in the front on public city streets. In 2020, Waymo began testing its autonomous long-haul trucks on Texas interstates. Texas Department of Transportation officials have expressed clear commitments to building on the momentum of AV development and investment in Texas.

State law allows an automated motor vehicle to operate in the state regardless of whether a human operator is present in the vehicle, as long as certain requirements are met. Texas also preempts local regulation of automated motor vehicles and automated driving systems. The Texas A&M Engineering Experiment Station was awarded a portion of the \$60 million in federal grant funding

allocated for automated driving systems research for its Automated Vehicle for All project.

Bills Passed in 2019: N/A

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Utah

Driverless vehicles are regulated on Utah roads under legislation approved in 2019. While any properly insured autonomous vehicles are allowed to operate, autonomous networks must be registered with the state. Vehicles must be operated in compliance with all applicable traffic and safety laws and must be able to achieve a minimal risk condition or make a request to intervene if a system failure occurs. Finally, Utah permits the Department of Transportation to obtain, collect and utilize anonymized location data of connected vehicles.

The Utah DOT in conjunction with the Utah Transit Authority launched Utah’s first autonomous shuttle pilot in April 2019. The project was an \$800,000 investment in a contract with the French startup EasyMile, who leased their shuttle model EZ10 for an estimated \$250,000. However, in February 2020, after an accident that left one hurt passenger in Columbus Ohio, the UDOT cut the pilot program short.

Bills Passed in 2019: Senate Bill 72, House Bill 101

Bills Introduced in 2020: HB 414

Bills Passed in 2020: N/A

Vermont

Vermont has established an automated vehicle testing program and granted authority to the Agency of Transportation to adopt specific rules. State law requires that during a test an operator is seated in the driver’s seat of the automated vehicle monitoring the operation of the vehicle and is capable of taking immediate control if necessary. The legislature directed the Agency of Transportation to publish an Agency of Transportation’s Automated Vehicle Testing Guide, by January 1, 2021, that includes a list of municipalities that have pre-approved



testing of automated vehicles on certain highways within their geographic boundaries.

Bills Passed in 2019: Senate Bill 149

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Virginia

In a state where AV testing is actively occurring, Virginia has no laws or regulations specifically pertaining to autonomous vehicles. However, the state has taken an active role in encouraging testing and deployment. Seventy miles of Virginia highways have been designated “automated corridors” and outfitted with high-definition mapping and data acquisition systems to support automated-vehicle testing.

Virginia is a prime example of the fact that autonomous vehicles can operate in regulation-less states, as long as the operator adheres to state and federal law.

By the end of 2019, Daimler Trucks and tech firm Torc Robotics had already begun testing self-driving trucks on Virginia highways, though they were confined to one part of the state. In 2020, Dominion Energy rolled out Virginia’s first electric autonomous shuttle to be tested in the Mosaic District of Fairfax County—a one mile route that navigates through a traffic light intersection.

Virginia Tech Transportation Institute was awarded a portion of the \$60 million in federal grant funding allocated for automated driving systems research for both its Safely Operating ADS in Challenging Dynamic Scenarios: An Optimized Automated Driving Corridor Demonstration project and its Trucking Fleet CONOPS for Managing Mixed Fleets project.

Bills Passed in 2019: N/A

Bills Introduced in 2020: Senate Bill 1100

Bills Passed in 2020: N/A

Washington, DC

In 2012 the District of Columbia became one of the first jurisdictions to pass legislation regarding the testing of autonomous vehicles. On November 2, 2020 Mayor Bowser signed the Autonomous Vehicles Testing Program bill which was approved by Congress just a few days later. The Act regulates the testing of autonomous vehicles on District roads through a testing program at the District Department of Transportation. To test an autonomous vehicle on public roads, an autonomous vehicle testing entity must submit certain information to DDOT for approval, including vehicle information for each vehicle tested; a safety and risk mitigation plan; and a description of the area and conditions under which an autonomous vehicle can function while being tested autonomously. Among other things, the bill requires crash and data reporting, including any crash of its vehicles while under autonomous operation that results in property damage, bodily injury, or death.

An Autonomous Vehicle Working Group, established by Mayor Bowser in February 2018, (Mayor’s Order 2018-018), has been exploring the implications of autonomous vehicles, including workforce and employment, urban planning, parking, and a range of other issues. In a study of AV report released earlier in 2020, the District Department of Transportation in D.C. found that current projections of AV integration on highways will lead to more congestion and a loss of traffic violation revenue for the city.

Bills Passed in 2019: N/A

Bills Introduced in 2020: B 248

Bills Passed in 2020: Bill 23-232 (Autonomous Vehicles Testing Program Bill)

Washington

Washington state is considered on the lighter end of the AV regulatory spectrum. Governor Jay Inslee signed an executive order in June 2017 to require that state agencies with pertinent regulatory jurisdiction “support the safe testing and operation of autonomous vehicles on Washington’s public roads.” The executive order



establishes an interagency workgroup and enables pilot programs throughout the state. The order specifies certain requirements for vehicles operated with human operators present in the vehicle and for vehicles operated without human operators in the vehicle.

However, the state Department of Licensing says it did not know how many AVs have been on Washington roads. In response to the state's apparent inability to mandate testing information disclosure, in 2020, Washington passed House Bill 2676, that established minimum requirements for testing AVs, necessitating the reporting of planned local testing and any collision accidents. Currently, Nvidia and Waymo are publicly testing in Seattle.

Bills Passed in 2019: N/A

Bills Introduced in 2020: SB 6659, HB 2470

Bills Passed in 2020: HB 2676

(Note: On January 11, 2021 House Bill 1136 was introduced to make supplemental transportation appropriations including line items related to autonomous vehicle technology.)

West Virginia

There are no laws currently governing autonomous transportation in West Virginia. In 2017, there was an attempt to pass legislation in the state legislature but that effort failed. Finally, researchers at the University of West Virginia have been working on autonomous technology and even held a forum in 2017.

Bills Passed in 2019: N/A

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Wisconsin

Former Governor Scott Walker signed an executive order in May 2017 creating the Governor's Steering Committee on Autonomous and Connected Vehicle Testing and Deployment within the state Department of Transportation. The committee was tasked with advising

the governor "on how best to advance the testing and operation of autonomous and connected vehicles in the State of Wisconsin." The Committee submitted their report in 2018 and made several recommendations, including requiring municipal oversight, an application process and backup drivers. While these have yet to be enacted, the committee also noted that it believes current state law "does not prohibit the operation of autonomous vehicles."

Much like Virginia, Wisconsin is another example of a state that has no autonomous-specific regulations but still plays host to autonomous testing.

Bills Passed in 2019: N/A

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

Wyoming

In 2018, the Wyoming DOT director argued for the need to prepare for driverless vehicles. Wyoming is one of three states that received a grant from the USDOT in 2015 to participate in a connected vehicle pilot program tested along I-80. Yet, still there are no laws or executive orders governing AV use in Wyoming, though self-driving vehicles are not specifically prohibited by law. Next year, in 2021, Beep Inc. plans to roll out two autonomous shuttles in Yellowstone National Park.

Bills Passed in 2019: N/A

Bills Introduced in 2020: N/A

Bills Passed in 2020: N/A

(Note: Senate File 7, which would create a regulatory regime for autonomous vehicles in Wyoming, has been assigned a bill number and awaits further action from the state legislature.)



Liability and auto insurance

Traditional liability laws rely on the assumption that a human driver is in control of the vehicle. The inevitable deployment of driverless transportation will systematically change the way liability laws are applied. Current legal frameworks are ill-equipped to determine who is at fault—the owner, operator, passenger, manufacturer, or coder — and will be increasingly strained in determining who or what is in control of the vehicle. Federal regulators have offered little guidance on the matter, with the Department of Transportation’s 2018 AV 3.0 Report stating that compliance with federal safety standards “does not automatically exempt any person from liability at common law, including tort liability for harm caused by negligent conduct.” Thus, dealing with this issue will primarily be the responsibility of state legislatures and courts to determine liability rules for autonomous vehicles.

Spotlight

Cruise Begins Testing Self Driving Cars in San Francisco

Cruise, an AV subsidiary of General Motors, began testing fully driverless cars in San Francisco on December 2nd, 2020. This is the first time that Cruise has rolled out their AVs without human safety drivers. The scope of the test will be gradual, beginning in just one neighborhood before expanding outwards, and the DMV permit limits speeds to under 30 miles per hour. Still, this is an important milestone that marks yet another step for AV technology’s transition from R&D to becoming a legitimate commercial product.

Although there will not be a human driver, each vehicle still has a safety operator who can stop the vehicle in the case of an emergency, but cannot drive or control the car. As Cruise continues its urban testing, these operators can be expected to be fully removed.

Currently, most states have both tort liability laws holding drivers responsible for any accidents they cause, as well as manufacturing liability laws detailing manufacturers’ liability for any defects in their products. Uncertainty over which of these laws apply to companies that manufacture or design software for autonomous vehicles will lead to widespread confusion and increased legal costs in the absence of new legislation clarifying liability. Some states, such as Michigan and Nevada, have limited manufacturer liability by stating that manufacturers cannot be held liable for any unauthorized third-party modifications to their vehicles. Other states have implemented varying definitions of “operator” for liability laws. For example, under Texas law the owner of the vehicle is responsible for accidents and traffic violations, whereas in Tennessee the manufacturer assumes liability for any instances where their automated driving system is in control.

Even in cases where a test driver is present, it is foreseeable that the company could be held liable for the safety driver’s actions, or inactions, under theories of negligent hiring and negligent supervision, as well as under *respondeat superior*. Critical liability factors are likely to include: the content and extent of the training the company requires the safety driver to undergo before putting the driver on the road as part of an autonomous vehicle test, the instructions the company gives about what the driver should do when behind the wheel, and how the driver should respond in certain situations. What instructions will be deemed reasonable and sufficient to enable companies to limit or avoid liability in the event of an accident have yet to be determined.

In addition to changes in the law, industry disruptions are on the horizon. Specifically, autonomous technology will significantly alter traditional auto insurance. Autonomous technology promises to make cars increasingly safer, which will significantly reduce accident frequency and, potentially, accident severity. KPMG estimated in a 2017 white paper that the industry’s aggregate losses—the amount paid for all automobile accidents—could fall by roughly US\$122 billion in nominal dollars.



Spotlight

Lyft to Offer Self-Driving Rides in Multiple Cities Come 2023

Self-Driving company Motional and ride-hailing giant Lyft are planning to offer self-driving rides beginning in 2023. Motional, a joint venture between Hyundai and Aptiv, will integrate its next-generation self-driving Hyundais into the Lyft network in several unnamed cities.

As fleets of roadworthy vehicles transition from the non-autonomous status quo to partial driver substitution technology to a state of near-complete autonomy, the culpability arising from accidents will most likely move from the consumer to the auto manufacturer. Thus, the role of companies that manufacture or design software for autonomous vehicles in the insurance industry will likely disrupt the marketplace in three key ways.

First, we can expect a shift to manufacturers of driving risk and associated liability as more driving decisions are made by a vehicle's proprietary algorithmic "brain." Volvo and other manufacturers have announced that they would accept responsibility and liability should an accident occur due to their autonomous technology.

Second, in an environment where driving decisions are shared between the driver and the vehicle, we may see a consolidation of legal exposure. Providing insurance to both the driver and the manufacturer could prove to be a legal advantage by reducing the volume of cross-suits between the two regarding blame.

Third, the next generation of cars will capture increasing amounts of data via an array of sensors and cameras. A key issue to be determined by legislation and court rulings will be identifying which parties will have the legal authority to use and control that data.

Given these ongoing developments, it is certain that the driving insurance marketplace will eventually be redefined, and it is possible over the long term that auto manufacturers may even replace auto insurance companies altogether.

As for the next few years, change likely will occur more slowly. A 2020 Rand Corporation study on the future of auto insurance has concluded that the US auto insurance system is "sufficiently flexible" to accommodate the introduction of autonomous vehicles, and that in the near term we should not expect radical changes to the US auto insurance system or the auto insurance claims process.

Data privacy and security

As Internet-connected technology is integrated into more parts of everyday life, regulations are falling behind.

As more vehicles become connected, and potentially fully autonomous, the critical issues of data privacy and security will take center stage. Consumers will want to know what organizations are doing with their travel data, geolocation information, biometrics, and other pieces of their personal information. Consumers and regulators will also want to know how organizations are keeping that information secure. A recent **Consumer Watchdog** report warned that all of the top ten 2020 car models are vulnerable to fleet-wide hacks because of their Internet connectivity.

The laws and regulations governing data privacy and security in the US are highly fragmented. There is no uniform federal data privacy or security law. Rather, there is a patchwork of legislation governing myriad areas of data privacy and security at the state level, including in some cases, as it relates to AVs.

Concerning data privacy, the laws at the federal level are generally limited to specific industries, such as healthcare (HIPAA) and financial (GLBA). There is no comprehensive federal data privacy law. At the state level, we see a broader mix of laws and regulations.



All 50 states, for example, have their own version of a data breach notification law. A number of states have HIPAA and GLBA counterparts. Some states, such as Illinois, have robust biometric protections. And a hand full of states, such as California, are adopting new consumer laws that provide residents with control over their personal information. On January 1, 2020, for example, the California Consumer Privacy Act of 2018 (CCPA) took effect, introducing a first-of-its kind law in the US that gives most California residents expansive new rights around how covered businesses collect, use, store, and transfer their personal information. On November 3, 2020, California voters passed a ballot initiative that would significantly expand the CCPA come January 1, 2023. And other states are likely to follow. Each of these developments will impact how IoT technology, including connected AVs (CAVs), are regulated. In fact, several states — Michigan and Nevada among them — have provisions in their AV laws requiring operators to provide privacy policies to riders and seek their permission before disclosing their personal information to third parties. Ultimately, as internet connectivity begins to include physical items such as CAVs, already thorny questions on privacy will become even more complex, and require holistic solutions.

At the federal level, there is some movement to address the need for comprehensive, federal data privacy legislation. And like most areas of federal legislation, the proposals vary depending on political affiliation. Sen. Marco Rubio (R-FL) has introduced the American Data Dissemination Act, under which the FTC would be charged with developing and proposing new data privacy rules. This bill has been criticized for offering few concrete consumer protections and for the fact that it would preempt more comprehensive state legislation, including the CCPA. At the other end of the spectrum, congressional Democrats have offered several proposals with stronger consumer protections. A bill sponsored by Sen. Amy Klobuchar (D-MN), would require companies to rewrite service agreements, using “language that is clear, concise, and well-organized,” to allow consumers to see data collected on them and would require companies to notify consumers of any breaches within 72 hours. [The Consumer](#)

Spotlight

Zoox Releases Driverless Shuttle

Zoox, an AV company backed by Amazon, released its shuttle-like autonomous vehicle without a steering wheel that would, in theory, be summoned with a ride-hailing app. Zoox has long been interested in designing urban robotaxis using purpose-built vehicle design. The vehicle is 12 feet long and can carry up to four passengers at a time. It can travel in either direction and is capable of operating 16 hours in between charges. In June, Amazon acquired Zoox startup for \$1.2 billion.

[Data Protection Act](#), sponsored by Sen. Ron Wyden (D-OR), would require companies to release annual reports detailing privacy-protection efforts and set up a “do-not-track” site where consumers can opt out of data collection. Finally, the most comprehensive proposal may be the [Data Care Act](#), sponsored by Sen. Brian Schatz (D-HI). The bill would give personal data protections similar to medical records, creating three main duties of data collectors, the “duty to care,” the “duty of loyalty,” the “duty of confidentiality,” to be enforced by the FTC.

There has also been some movement at the federal level as it relates to IoT security. On November 20, 2020, the US Senate unanimously passed the IoT Cybersecurity Improvement Act (HR 1668), which was signed into law by President Trump on December 4, 2020. The legislation requires the Department of Commerce’s National Institute of Standards and Technologies (NIST) publish cybersecurity standards for the use of IoT devices procured by the federal government, and sets forth standards and penalties for those devices not aligning with NIST standards. On December 15, 2020, NIST released its IoT security guidelines which remain open for public comment through February 12, 2021.



The IoT Cybersecurity Improvement Act is seen by many experts as a step in the right direction. This act prioritizes IoT security for federal systems, and shows a willingness on the part of the federal government to set standards in the emerging IoT space that will likely follow into the private sector. This trend is also starting to percolate in the states. California was the first state to address IoT security with the passage of the Connected Device Law in 2017. The California Connected Device Law requires that IoT devices incorporate “reasonable” security features to prevent “unauthorized access, destruction, use, modification, or disclosure” of any data they contain beginning in 2020. What constitutes “reasonable” security remains to be seen. In 2016, the California Attorney General issued a report in which the office endorsed the CIS Controls as baseline reasonable. Whether that remains a reasonable standard in 2021 is an open question. Ultimately, California has not been a model of clarity as it does not address various security standards and leaves much to interpretation. However, as with other areas of security and privacy law, California is likely to generate copy-cat laws from other states as IoT technology becomes ubiquitous and CAVs more commonplace.

Whether to what extent a Democrat controlled Congress and White House will change the prospect of a federal data privacy and security law remains an open question. What is known is that the issues of data privacy and security, especially IoT security, are not going away, and are likely to take center stage in 2021.

Telecommunications and connected infrastructure

After months of debate, in November 2020 the Federal Communications Commission (FCC) voted unanimously to reassign a significant portion of the 5.9 GHz spectrum band, which had previously been reserved for Dedicated Short-Range Communications (DSRC) services to facilitate transportation-specific applications. The band will now host both unlicensed uses and Intelligent Transportation Systems (ITS) services with an eye to autonomous fleet deployment. The FCC also announced it will adopt the use of cellular protocols, also known as cellular vehicle-to-everything (C-V2X) standards for safety-related vehicular communications and transition away from DSRC-based technology.



By way of background, the agency first set aside spectrum for DSRC services to support transportation uses in 1999. Over the last 30 years, automakers and localities had begun to equip vehicles and roadside infrastructure with DSRC-based technologies, which facilitate both vehicle-to-vehicle and vehicle-to-infrastructure communications. However, inevitably, technology has advanced since 1999, resulting in several alternatives to DSRC, the most noteworthy being C-V2X communication that offers vehicle-to-vehicle, vehicle-to-infrastructure and vehicle-to-pedestrian communication.

To address technological advancements and the underutilization of the 5.9 GHz band to date, the plan adopted by the FCC allocated the upper 30 MHz of the 5.9 GHz band for new automotive communications technology, and specifically designated C-V2X as the standard for such communications, while saving the lower 45 MHz of the band for unlicensed uses like Wi-Fi.

C-V2X relies on standard cellular protocols to provide direct communications between autonomous vehicles and other vehicles on the road, in addition to infrastructure that provides safety information, cyclists, pedestrians and road workers. C-V2X is also expected to support new, advanced applications as cellular companies transition to faster, more responsive 5G networks. While C-V2X can technically be deployed over both 4G LTE and 5G cellular networks, the near-20-times faster speed of 5G will ultimately allow autonomous vehicles to be able to process and react to data in just nanoseconds. Opening the band to C-V2X has been backed by large automakers as well as wireless carriers and wired broadband providers, who supported the FCC's latest order for its commitment both to C-V2X and unlicensed uses.

The Department of Transportation (DOT), under former Secretary of Transportation Elaine Chao, opposed the plan to allocate spectrum for unlicensed uses in addition to transportation. Prior to the more recent reform effort, the FCC had held off on 5.9 GHz spectrum rulemaking efforts at the request of DOT Secretary Chao. The transportation agency said in a statement that, "the Department of Transportation has clearly stated in testimony and correspondence that

the 75 MHz allocated in the 5.9 GHz, what we call the 'Safety Band,' must be preserved for transportation safety purposes." The DOT is primarily concerned with unlicensed uses interfering with transportation communications, although there is not any conclusive research that settles the issue.

Former FCC Chairman Ajit Pai argued that the increase in demand for Wi-Fi during the COVID-19 pandemic has shown the need for more spectrum as people are increasingly working from home and streaming entertainment. There has been bipartisan support on the Commission for splitting the spectrum band, and no commissioners dissented from the vote. Current Acting Chairwoman Jessica Rosenworcel did not make a statement following the adoption of the November 2020 vote. Her past statements reflect a desire to balance the need for safety and more unlicensed opportunities, and throughout her career she has supported innovative, forward-looking spectrum policy. Whether and how Chairwoman Rosenworcel will introduce additional plans for the 5.9 GHz band remains to be seen. In any event, it will still take years for the auto industry to coalesce around and implement C-V2X. As such, consumers may not feel the transportation-related implications of this decision for years and possibly decades. Nonetheless, carving out dedicated space for C-V2X will give the industry the assurance it needs to invest in an autonomous future.

The United States is not alone in the pursuit of 5G and an accommodating spectrum policy to match. The United States is on the cusp of building out a truly nationwide 5G system while Chinese carrier Unicom, which has 5G coverage in 50 cities and Europe, is building towards a goal of having 5G connectivity in at least one major city in each EU member state.

In regard to spectrum policy, China is currently making the most concerted effort to push manufacturers to include C-V2X. The country set aside a dedicated bandwidth on the 5.9 GHz spectrum solely for Connected V2X use, and plans to have the technology rolled out across 90% of major cities and highways in the near future. Manufacturers in the US have been slower to move away from Dedicated-Short-Range-Communication (DSRC) technology but the recent



decision by the FCC will provide the predictability required for automotive companies to increase investment in C-V2X. The European Parliament took a more restrictive approach to C-V2X by voting in May 2018 to endorse DSRC in new vehicles, essentially de-incentivizing the installation of C-V2X.

Going forward, ongoing embracement of 5G and investment in C-V2X technology will determine, in large part, which countries lead the autonomous revolution..

COVID-19 impact

The COVID-19 pandemic impacted every industry in the United States and the automotive sector is no exception. The new normal we all endured in 2020 and continue to live with to this day presented an opportunity for autonomous vehicles. In fact, in many ways, the COVID-19 reality has spawned a new

autonomous revolution. As personal vehicles gain appeal and ride-sharing is shunned (if not banned outright), autonomous vehicle developers have been forced to either refocus their efforts on alternative autonomous applications or reinvent their vehicles entirely. As Dentons Principal and Chair of the Global Autonomous Vehicle Group, Eric Tanenblatt, wrote in October in [Futurride](#), "this new normal presents an opportunity for a fresh vision of autonomous vehicles focused on public health and safety."

In that October article, three innovative autonomous vehicle uses were highlighted. Firstly, [Nuro](#), after receiving the second fully autonomous test-drive permit from California in early April, publicly announced that the company would use vehicles for grocery and food delivery to cut down on human-to-human contact and provide essential services to society's most vulnerable.



Additionally, the **Mayo Clinic**, in Jacksonville, Florida has been using autonomous vehicles to transport medical supplies and COVID-19 tests while **General Motors'** subsidiary **Cruise** is using its self-driving vehicles to deliver meals to vulnerable populations.

Additional examples include **Gatik**, an AV delivery company. Gatik, partnering with Canadian retailer Loblaw, is deploying five mid-sized autonomous trucks in Toronto starting in January. The vehicles, which will operate on public roads, are focused on middle-mile retail delivery, filling the gap between long-haul vehicles and last-mile bots.

Similarly innovative applications are now roaming the streets of China, as Kentucky Fried Chicken debuted new “**restaurants on wheels**.” These miniature, driverless, food-trucks dole out hot chicken paid for using QR codes. The vehicles are likely a result of the Neolix-Yum Brands partnership reported by Forbes last month.

In addition to impacting the business decisions, the pandemic changed how lawmakers viewed the autonomous vehicle industry. In fact, at the outset of the pandemic, as discussed in a previous section, House Republicans called for a revival of a federal autonomous vehicle bill as a mechanism to deal with COVID-19. The call to action was released in the form of a **blog post** from Republicans on the House Energy and Commerce Committee. They argue that AVs present an enormous opportunity to:

- Help seniors and those with disabilities become more self-sufficient;
- Deliver tests, medical supplies, groceries, and other necessities;
- Jump-start our economy by not just preserving jobs, but also creating new ones, as businesses get back to work and eye whole new opportunities;
- Drastically improve roadway safety; and, of course,
- Have the United States lead on the world stage.

A few months later, Representative Bob Latta (R-OH) reintroduced the SELF Drive Act noting that the COVID-19 pandemic has highlighted the need for AVs to support vulnerable populations. Finally, the pandemic has influenced telecommunications policy. FCC Chairman Ajit Pai argued that the increase in demand for WiFi during the COVID-19 pandemic has shown the need for more spectrum as people increasingly work from home and stream entertainment. That fact played into the FCC vote to allow unlicensed uses in spectrum previously reserved solely for transportation. While the pandemic is far from over, with the vaccine rollout underway, the beginning of the end is upon us. However, the impact of a global pandemic due to highly transmittable viral disease will be felt in the industry for years to come.



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