VDA Aligned Paper on Intelligent Connected Vehicle 2.0

July 2021

In 2018, under the witness of the German Chancellor and the Chinese Premier, the German Federal Ministry for Economic Affairs and Energy (BMWi), the German Federal Ministry of Transport and Digital Infrastructure (BMVI), and the Chinese Ministry of Industry and Information Technology (MIIT) signed the "Joint Declaration of Intent on Cooperation in the Field of Automated and Connected Driving". To effectively implement the joint declaration, and to define and solve the common challenges, VDA China drafted the "VDA Aligned Paper on Intelligent Connected Vehicle" in 2018, which covered the following topics:

- On-road testing and driving on roads.
- HAD map and localization.
- Data collection, transfer, and storage.
- Homologation related standards.

Significant progress has been made in the listed topics:

On-road testing and driving on roads

The Ministry of Public Security (MPS) issued the "Draft Proposed Amendments of the Road Traffic Safety Law" in March 2021, for the first time China has proposed specific legislation for autonomous vehicles at the level of national law. The draft amendment clarified the requirements related to road testing of, and access by, vehicles equipped with automated driving functions, as well as regulating how liability for traffic violations and accidents would be allocated.

Meanwhile, in the "Management Rules for Road Testing and Demonstration Application of ICVs (for Trial Implementation)" issued by MIIT in January 2021, on-road testing of ICVs on the highway has already been included.

Therefore, the Chinese authorities are fully aware of the importance to support on-road testing of automated and connected vehicles especially on the highway, and this has been reflected in the above-mentioned two documents.

Data collection, transfer, and storage

The Data Security Law was published in June 2021 and will be formally effective starting September 2021. It is regarded as another pillar of China's legal framework on information security and data protection, in addition to the Cybersecurity Law introduced in 2017. The Cyberspace Administration of China (CAC) announced "Provisions on Management of Automotive Data Security (Draft for Public Comments)" in May 2021. The provisions provided definitions and set up principles for important data and personal information.

Along with the above updates, it is decided to update the "VDA Aligned Paper on Intelligent Connected Vehicle" based on the 2018 version.

VDA Aligned Paper on Intelligent Connected Vehicle 2.0 includes the following topics:

- Legal framework and regulatory system.
- Cybersecurity, data, and personal information protection.
- Standards.
- Others.

Topic 1: Legal framework and regulatory system

1. Legal framework and regulatory system

China's recent steps to revise and harmonize the legal framework and regulatory system, including the modifications for autonomous driving, and the roll-out of a regional pilot program demonstrate that the country is on the right trajectory in ICV development. The recent revision on the Road Traffic Safety Law and the release of "Administration Guide for ICV Manufacturers and Product Access (for Trial Implementation)" by MIIT are both praiseworthy initiatives, but we believe that there is much more to be done. To create a clear and compliant legislative environment for the future development of ICVs, it is necessary to further accelerate the adaptive revision process of the Road Traffic Safety Law.

Recommendations

- Accelerate the revision process and set a clear timetable to help enterprises better plan and develop their products.
- Intensify the dialogue mechanism under Sino-German cooperation framework on ICV development to share mutual experiences in proposing legal amendments for ICV development.
- Ensure legal certainty with a sound ICV policy landscape and provide a sufficiently dynamic and flexible environment capable of keeping up with the constant changes in technology (e.g., a clarification of OTA software management rules in after-sales is necessary).
- Prevent the legal or regulatory system to be fragmented or potentially divergent, which could restrain the development of ICV (e.g., the consistency of national standards for autonomous driving classification should be guaranteed).

2. Cross-ministry coordination

Successful cross-ministry coordination is one of the basic conditions for further advancing the development of ICV in China. It is of paramount importance to ensure that different ministries are coordinated in order to maximize the efficiency and effectiveness of ICV policy formulation. Coordination and synchronization between different ministries are critical to avoid an overlapping and conflicting regulatory framework as overlapping tasks often cause confusion and ambiguity for both enterprises and customers. Governmental coordination needs to develop, along with the fast-growing ICV sector to ensure a consistent legislative and policy environment.

Recommendations

- Define the responsibilities and boundaries of government bodies related to ICV development.
- Establish a clear implementation guideline for strategic policies with focus on specific and tangible measures, provide policy interpretations and improve communication with the industry.
- Enable and facilitate cross-border data flows, so as to promote continuous improvement of design, operation and maintenance of ICV.

3. Auto companies to be deeply involved in the drafting process of laws, policies, and regulations

Formulation of ICV-related policies involves many fields including legal requirements, cybersecurity, and others. It is therefore important to engage all stakeholders in the ICV policy formulation process. MIIT established an Intelligent Connected Vehicle Promotion Group (ICV-2035) in mid-March 2021. Under the coordination of EIDC, China's associations of auto industry, including CAAM, SAE-China, CATARC, CAICT, etc., proposed a series of important topics (e.g., homologation, ecosystem, OS, cybersecurity) for ICV development in the next three years. It is believed that ICV-2035 will play a significant role in developing relevant policies, national projects and technical roadmaps, and this initiative should be expanded and detailed to provide more accessibility for enterprises. All stakeholders aiming at a smooth transition towards ICV must be involved in this important process.

Recommendations

- Establish a regular exchange mechanism between enterprises and ICV-2035, through which ICV-2035 can expand its efforts under Sino-German cooperation framework on ICV development.
- Enhance the homologation mechanism under Sino-German cooperation framework on ICV development.
- Carry out extensive consultations between VDA and relevant institutions to ensure that all interests and needs are accounted for, where communication is the key to achieve this.
- Establish a communication mechanism between VDA and national ministries other than MIIT, and set up more working groups with NPC, MPS, CAC, in consideration of the intricacy of ICV (e.g., legal, cybersecurity, etc.).
- Emphasize accessibility as a principle within every communication and cooperation mechanism.

Topic 2: Cybersecurity, data, and personal information protection

Digital economy is recognized as the new driving force of high-quality development in China and globally. Free flowing of safe and well-organized data is essential to foster the digital economy.

Free flow of data is of great significance for the development and international cooperation of digital economy. In view of the strategic value of data, protection of citizens' privacy and national security, countries are taking various measures to supervise more effectively the cross-border flow of data.

Both EU and China issued relevant laws and regulations to strengthen the supervision on cybersecurity, data, and personal information protection. China is stepping up efforts to strengthen data security, especially for data to be transferred overseas. In late April, the draft of Personal Information Protection Law was submitted for a second review to the Standing Committee of the 13th National People's Congress, China's top legislature. In early May, the "Provisions on Management of Automotive Data Security" was issued for public comments. In early June, China passed the Data Security Law, which will come into force on 1 September 2021. On top of that, the Cyberspace Administration of China (CAC) unveiled a "Draft Regulation on Management of Automotive Data Security", intensifies the protection of personal and important data generated in Mainland China. Poorly handled customer complaints on automotive data-related problems that made national headlines and attracted massive attention have driven regulators to make efforts to carry out stricter supervision on these data.

Challenges

As digital technology is being increasingly adopted by the auto industry, data brings not only opportunities for the consumer engagement of OEMs but responsibilities to keep consumer data safe. Data that includes location information and personal information is immensely valuable to enterprises, industry as well as city administration. It is essential to build up a comprehensive legislative framework and a coordinated law/standardization working group involving key players from the industry or international voices.

On the one hand, over regulation or one-size-fits-all approach may lead to challenges on R&D, production, and other normal business activities. On the other hand, it is crucial to have a clear interpretation or detailed measures for implementation that meet the development requirements of automotive industry. Furthermore, automotive-specific regulations shall be well-harmonized with other laws/regulations, such as Cybersecurity Law, Data Security Law (Under Drafting), Personal Information Protection Law, and be well-coordinated among Chinese ministries.

Recommendations

- **Coherent law and standardization formulation**. A clear and cogent regulation serves as the foundation for the industry development, and transparency is also essential to support the coherence and consistency.

- **Coordinated cross-ministry alignment**. Ministries and local governments are making proactive initiations for ICV development in China, for which synergy and coordination are expected to provide a clear roadmap and prevent repeated investment.

- **Harmonized with international practices**. Sufficiently referencing international practices and maintaining harmonization with international general principles will benefit both international and local players.

- **Formulate industry management rules and compliance procedures that are in line with the development of the auto industry, encourage and promote the application of data in the industry on the premise that the processing and application of appropriate data (critical that related to non-national security or personal security) meet the requirements of relevant laws or regulations.** With the development of automated driving technologies, collection, use and cross border transmission of data for R&D and production purposes should be encouraged.

Topic 3: Standards

Challenges

Along with the development of new technologies such as electrification, digitalization, automation and connectivity, intelligent connected vehicles will bring new challenges to the system of technical standards, regulations, and homologation. As the level of driving automation increases, the automotive industry will face a situation where many traditional regulations are no longer applicable to autonomous vehicles.

In this context, the United Nations World Forum for Harmonization of Vehicle Regulations (UNECE WP.29) has launched research on UNECE regulation and homologation systems related to autonomous driving vehicles, as well as ISO TC22. It is suggested to further participate in the development and revision of relevant international standards and strengthen the international coordination of such standards including UNECE WP. 29 and ISO TC22. The coordination efforts will help to reduce the cost of commercialization and popularization of ICV-related technologies and promote the global circulation of such technologies and products.

- **Harmonization between international and Chinese regulations and standards.** The gap between national standards and corresponding international standards is widening, which will create new barriers for enterprises in global trade.

- **No clear boundary between the implementation of mandatory and recommended standards**, and some recommended standards are incorporated into type approval system or other market access management rules, making them mandatory and causing difficulties for enterprises to evaluate how effective implementation of the standards are.

- The significantly increased number of standards in the industry and numerous management departments, standardization committees, bodies, and consortia, as well as ministries lead to a lack of coordination, repeated contents or even conflicts, making it difficult for enterprises to closely participate in or follow up the development of relevant standards and implement them on the ground.

- The long R&D process in the automotive industry and the insufficient time for implementing the standards make enterprises unable to complete the corresponding technical adjustments and modifications in the short term. Thus, it is necessary to allow **sufficient transition period, especially for the implementation of mandatory standards.**

- There are multiple technical routes for the development and iteration of ICV technologies, but the long development process of national standards fails to keep up with the progress of new technical requirements and may not be able to adapt to new functions, while the lack of a mechanism to determine the applicability of the standards in a diverse range of new functions has created constraints on the development of such safer and more efficient functions.

Recommendations

- Continuously strengthen Sino-German exchange on technical standards, regulations, test evaluation systems for automated driving and connectivity by focusing on the activities of UN ECE, ISO, and IEC.

- Improve the communication and coordination among different ministries and multiple technical committees.
- Adhere to the bottom line of using national mandatory standards for homologation and other market access regulation, prohibit the application of recommended standards as mandatory rules.
- Other types of standards should be adopted voluntarily by enterprises.
- If the national recommended standards are used for homologation or other market access regulation, the existing discussion mechanism should be expanded and transition period should be extended, so that enterprises are informed as early as possible to provide insights to continue and stabilize the provision of compliant products for consumers.

Topic 4: Others

As an important part of ICV eco-system, the development and implementation of "Cloud Base Platform" gets close attention from the auto industry. There has been a long-lasting discussion on the necessity and feasibility to set up the "Real Time Monitoring" (RTM) system for vehicles equipped with L3 and above ADS, analogy to NEV RTM, i.e., the authority will request OEM to upload specific data from ADVs to government platform via backend, for the purpose of safe driving monitoring, incident response and liability judgement.

Challenges

Analogy to "NEV RTM", if "ICV RTM" comes into service, huge impacts are foreseen on ICV design, development, manufacturing, as well as backend design and operation.

- Data volume will be striking considering the abundance of ICV-related data and the rapidly increasing ADS equipment installation rate.

- Data security and protection will be a key focus, and a cautious balance should be achieved between cyber security, data security and safety monitoring.

- For ADV, a mass of data downlink exists (e.g., HAD map). Communication resources might be insufficient and difficult to be allocated due to conflicts between uplink communication required by RTM and downlink communication by features, and sometimes such resource insufficiency could lead to driving safety risks.

- The ICV RTM is still a concept and in the midst of feasibility research stage, while L3 and above ADS development is at the starting point of mass production. How to address the different timelines for ADV mass production and ICV RTM implementation will be a challenge for the industry.

Recommendations

If the "ICV RTM" is necessary, we propose to consider the following factors:

- **The scheme and timeline should be transparent.** Regarding the technical key points, e.g., content of data collected, transmission protocol, cybersecurity, a thorough discussion and feasibility research by the auto industry will be very helpful.

- **Feasibility test and verification are highly recommended.** Stress test is particularly important to adapt the situation with increased communication loads due to high quantity of connected ICVs.

- **Only critical data should be required for driving safety monitoring**, incident response and liability judgement. Mandatory supervision purposes and voluntary business purposes should be distinguished to provide better services.

- The effect of "NEV RTM" should be researched for lessons learnt.

- The data upload requirements from local platforms should be combined or at least harmonized with those from the national platform.

- Exemptions should be granted for the vehicles before the official launch of ICV RTM, and a transition period should be available for existing vehicles.