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**Ministry of Industry and Information Technology**  
**[2022] No. 5**

**MIIT5-2022**

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**Guidelines for the construction of internet of vehicles  
network security and data security standard system**

车联网网络安全和数据安全标准体系建设指南

**Issued by: General Office of the Ministry of Industry and Information**

**Technology, PRC**

**February 25, 2022**

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# Guidelines for the construction of internet of vehicles network security and data security standard system

## 1 General requirements

### I. Guiding ideology

It is guided by Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era. It fully implements the spirit of the 19th CPC National Congress and all previous plenary sessions of the 19th CPC Central Committee. It seriously implements the decisions and arrangements of the CPC Central Committee and the State Council. It coordinates development and security. It focuses on the security needs of the Internet of Vehicles industry and strengthens the top-level design of Internet of Vehicles network security and data security standards. It pays attention to the connection with the Internet of Vehicles-related standard systems. It increases the effective supply of standards. It strengthens the application and implementation of standards. It accelerates the construction of a systematic, scientific and standardized Internet of Vehicles network security and data security standard system. It gives full play to the guiding and normative role of standards in the safe and healthy development of the Internet of Vehicles industry.

### II. Basic principles

**Demand-oriented and jointly promoted.** Closely align with the urgent needs of the Internet of Vehicles industry for network security and data security. Encourage all links in the industrial chain such as complete vehicles and key equipment, Internet of Vehicles service platforms, information communications, network security, and all parties in production, education, research and application to strengthen cooperation. Jointly promote the development and implementation of cross-industry and cross-field standards. Continuously improve the quality and efficiency of standards.

**Focus on key points and prioritize urgent needs.** Focus on key areas such as the network security of vehicle networking terminals and facilities, network communication security, data security, application service security, security assurance and support. Focus on increasing the effective supply of basic general, common technologies, test methods, typical applications and other standards urgently needed by the industry. Cover the key areas and key links of network security and data security of vehicle networking.

**Openness, integration and deepening of cooperation.** In light of the current status of

## **II. Key areas and directions**

### **1) General and basic common standards**

The overall and basic common standards are the overall, general and guiding standards for the network security and data security of the Internet of Vehicles, including three types of standards: terminology and definitions, overall architecture, and cryptographic applications.

The terminology and definition standards mainly regulate the main concepts of Internet of Vehicles network security and data security, providing a basis for the terms and definitions in related standards.

The overall architecture standard mainly regulates the overall architecture requirements of the Internet of Vehicles network security. It clarifies and defines the protection objects, protection methods, and protection mechanisms. It guides enterprises to carry out network security protection work in a systematic manner.

The cryptographic application standard mainly regulates the general requirements for the cryptographic application of the Internet of Vehicles. It clarifies the requirements for digital certificate format, digital certificate application, and device cryptographic application.

### **2) Terminal and facility cybersecurity standards**

The terminal and facility network security standards mainly regulate the network security requirements related to Internet of Vehicles terminals and infrastructure, including four types of standards: network security of on-board equipment, network security of vehicle-side equipment, network security of roadside communication equipment, and network facility and system security.

The network security standards for in-vehicle equipment mainly regulate the security protection and detection requirements of key intelligent devices and components of intelligent Internet of Vehicles, including security standards for automotive gateways, electronic control units, automotive safety chips, and in-vehicle computing platforms.

The vehicle-side network security standard mainly regulates the safety protection and detection requirements of the vehicle's electronic and electrical architecture, bus architecture, system architecture, etc.

The network security standard for roadside communication equipment mainly specifies the security protection and detection requirements for networked roadside equipment.

The network facility and system security standards mainly regulate the security protection and testing requirements of Internet of Vehicles network facilities and

systems.

### **3) Network communication security standards**

The Internet of Vehicles communication security standard mainly regulates the security requirements of Internet of Vehicles communication network, identity authentication and other related security requirements, including two types of standards: communication security and identity authentication.

The communication security standards mainly regulate the cellular vehicle-to-everything (C-V2X) and the security protection and testing requirements of cellular mobile communications (4G/5G), satellite communications, wireless radio frequency identification, in-vehicle wireless LAN, Bluetooth low energy (BLE), Zigbee, and ultra-wideband (UWB) used in vehicle networks.

The identity authentication standard mainly regulates technical requirements such as certificate application interface, certificate management system, security authentication technology and testing methods, and lightweight authentication of key components related to digital identity authentication of Internet of Vehicles.

### **4) Data security standards**

The data security standards mainly regulate the data security and personal information protection requirements of intelligent Internet of Vehicles, Internet of Vehicles platforms, in-vehicle application services, etc., including five types of standards: general requirements, classification and grading, outbound security, personal information protection, and application data security.

The general requirements standards mainly regulate the type, scope, quality, granularity, etc. of data that can be collected and processed by the Internet of Vehicles, including standards for minimizing data collection, secure data storage, encrypted data transmission, and secure data sharing.

The classification and grading standards mainly regulate the classification and grading protection requirements of Internet of Vehicles data. They formulate the dimensions, methods, examples and other standards for data classification and grading. They clarify the important data types and security protection requirements.

The data outbound security standard mainly regulates the Internet of Vehicles industry to implement data outbound security requirements in accordance with laws and regulations, including key points and methods for data outbound security assessment.

The personal information protection standard mainly regulates the personal information protection mechanism and related technical requirements of Internet of Vehicles users. It clarifies the scenarios, rules, and technical methods for protecting user sensitive data

Internet of Vehicles business delivery gateway (HI) interface.

The security capability assessment standard mainly regulates the deployment of security protection measures and the implementation of security services by Internet of Vehicles service platform operators, intelligent Internet of Vehicles manufacturers, basic telecommunications companies, etc. It proposes relevant requirements such as network security maturity model, data security maturity model, security capability maturity evaluation criteria, assessment implementation methods, institutional capability certification, and road vehicle information security engineering.

### 3 Organization and Implementation

**I. Accelerate the development of standards.** Under the guidance of the Special Committee on the Development of the Internet of Vehicles Industry of the National Manufacturing Power Construction Leading Group, we focus on the coordination and connection with relevant standard systems such as intelligent Internet of Vehicles, information communications, electronic products and services. Guided by the Internet of Vehicles network security and data security standard system, we organize all parties involved in industry, academia, research and application to jointly promote the development of standards.

**II. Implement dynamic updates.** In accordance with the requirements of relevant laws and regulations on network security, combined with the technological innovation and industrial development trends of the Internet of Vehicles, we will continue to improve the Internet of Vehicles network security and data security standard system to provide strong support for the development of the Internet of Vehicles industry and industry management.

**III. Strengthen publicity and implementation.** Give full play to the role of local competent departments, standardization organizations, industry associations and professional institutions, organize and carry out standard publicity and implementation and technical seminars. Promote the publicity and implementation of standards through training, consultation, forums, etc. Organize the selection of outstanding enterprises and cases in the pilot implementation of standards, form best practices, and promote the application and promotion of standards.

**IV. Deepen international cooperation.** Strengthen exchanges and cooperation with international standardization organizations. Actively participate in international standardization activities such as the International Telecommunication Union (ITU), the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC), and the United Nations World Forum for Harmonization of Vehicle Regulations (UN/WP29). Work with upstream and downstream companies in the global industrial chain to jointly promote the development of international standards.

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