



# Intelligent Connected Vehicles

## Monthly Report on Information Service

(10<sup>th</sup> issue in 2022)



China Automotive Technology and Research Center  
(CATARC)

China Automotive Strategy and Policy Research Center

Digital Vehicle Research Department

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**PART ONE**

**Monthly Information Review**

# 1. Monthly Information Review



## Policy research viewpoints

### 1. At policy level

**The intelligent connected vehicle access management has entered into a new stage. The technical requirements for vehicle data security have been further refined. The pilot for innovation of high-precision maps has been launched across the country.**

- The Ministry of Industry and Information Technology issued the "Notice on Pilot Work of Access and Road Access of Intelligent Connected Vehicles" (Draft for Comments) and "Regulations on Administration of Road Motor Vehicle Production Access" (Draft for Comments) for the purpose of exploring the management requirements for the commercialization of ICVs, accumulating practical experience and supporting the formulation and revision of laws, regulations and technical standards for subsequent access system;
- The "Information Security Technology - Security Requirements for Processing Vehicle Data" provides detailed guidance for enterprises to implement the "Several Provisions on Vehicle Data Security Management (Trial)", while GB/T "Intelligent Connected Vehicle -General Requirements for Data" provides reference examples for classification and gradation of vehicle data; and
- The pilot work of high-precision maps has been actively promoted in Shanghai, Guangzhou, Shenzhen and other cities, while the pilot policy for high-precision maps (local version) issued by Shanghai has put forward some innovative ideas for management of high-precision maps.

### 2. At enterprise level

**Multinational automotive manufacturers have strengthened the layout of their local R&D capabilities in China. Tesla has made efforts to deepen the pure vision technology route. The roles of automotive manufacturers and technology-oriented enterprises in cooperative supply are ever-changing.**

- Volkswagen's software company CARIAD cooperated with Horizon to set up a joint venture in China, and Ford established an intelligent electric vehicle R&D and operation company in China, named "Mustang Mach Technology";
- Tesla will gradually remove ultrasonic radar and turn to pure vision automatic driving function, NIO, and Xiaopeng, Li Auto and Haomo published auxiliary driving mileage data generated during the vocation of National Day;
- Pony.ai was included in the SAIC 's technical supply system, and 200 BAIC ArcFox customized vehicles were selected for Baidu's self-developed L4 model.

# 1. Monthly Information Review

## Industry overview

This page is for information guidance, please refer to the following pages for specific event details.

### Keyword

### Event

#### ★★★★ Strategies



A joint venture established



Established Electric Mach Technology R&D Company in China



Planned to invest to establish a chip company

#### ★★★★ Products



Removed ultrasonic radar from Model 3/Y and turned to a purely visual route



L3 products to be launched in 2025, all models defined by software



L3 electric vehicle to be delivered in 2026



"VOYAH Zhuiguang" equipped with a centralized EEA, and to be firstly launched in November as expected



L7 and L8 released, equipped with Journey 5 and high-speed NOA



NV launched on the market, equipped with NIUTRON OS and Carpalpy dual-system



P5 Urban NGPs fully opened in Guangzhou

#### ★★★ Report about Travel on National Day



Total mileage of NIO Pilot reached 10,710,000km during the National Day holiday



Total mileage of high-speed NGP during the National Day holiday up to 1,420,000km



Total mileage of AD up to 7,810,000km and mileage of NOA reached 1,940,000km



Total mileage of Hpilot up to 1,130,000km during the National Day holiday

#### ★★★ Test demonstration



Cooperated with SAIC AI LAB to develop L4 shared models based on Marvel-R



Delivered 200 Apollo Moons based on Alpha T by BAIC ArcFox



Launched all unmanned test in Jiading, Shanghai

#### ★ Chip strategy



Obtained a 10year exemption from the US ban on chip exports to China



Planned to separate auto business from IoT businesses



Completed the acquisition of Steradian, a fabless semiconductor company for 4D imaging radar



Obtained strategic investment from Chery

#### ★ Operation



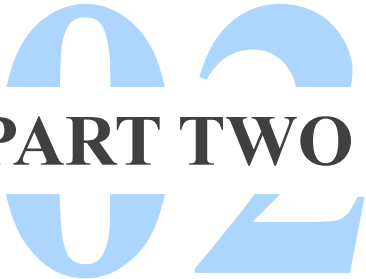
More than 10000 AT128 semi-solid lidars delivered in September



Applied for bankruptcy, and is studying restructuring and financing plans to maintain its leading position in the field of laser radar



Submitted IPO application in the U.S. with stock code "MBLY"



# PART TWO

## Policy Information Analysis

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### Access management

- Notice on Carrying out Pilot Work for Access and Road Access of Intelligent Connected Vehicles (Draft for Comments)
- Regulations on Administration of Production Access Permit for Road Motor Vehicles (Draft for Comments)

### Data security

- GB/T 41871-2022 Information Security Technology - Security Requirements for Processing Vehicle Data
- Intelligent Connected Vehicle - General Requirements for Data (Draft for Comments)

### High-precision maps

- Provisions of Shanghai Municipality on Pilot Management of High-Precision Maps Used for Intelligent Connected Vehicles (Draft)
- Urban advanced driving assistance map license issued for the first time in Shenzhen and Guangzhou

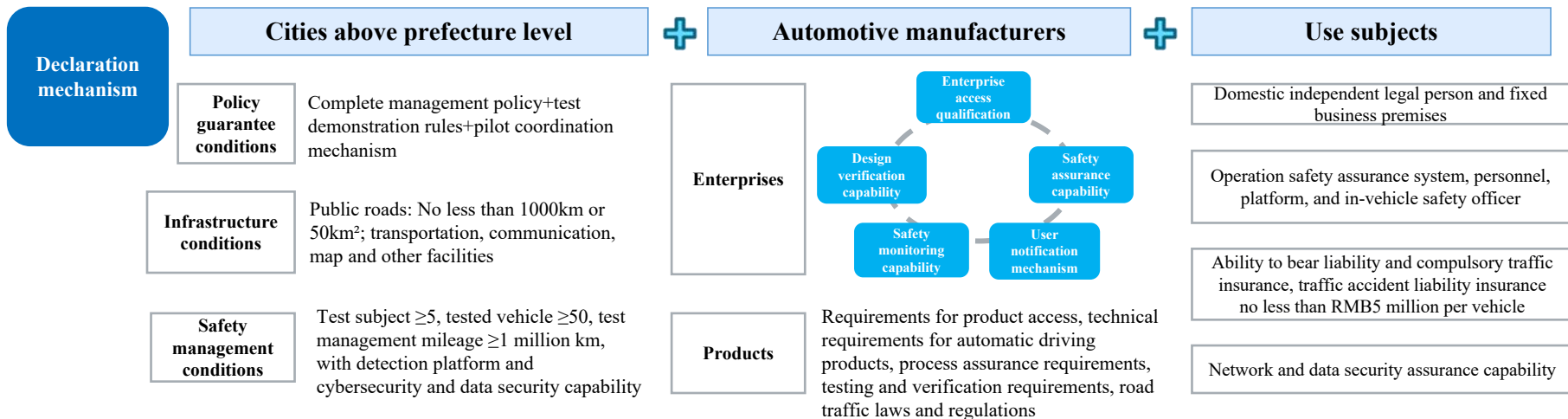
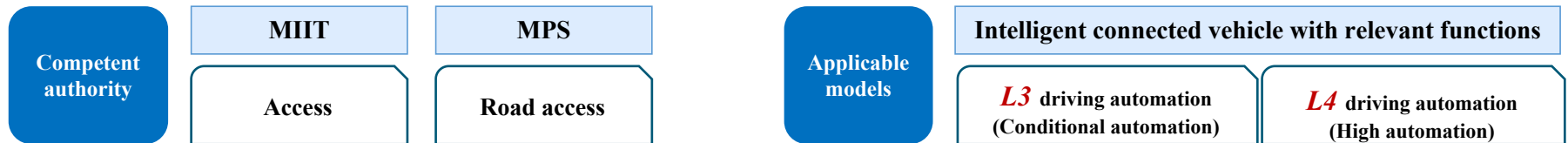
### Local policies

- Nanjing, Wuhan and Changsha National Pilot Areas for Artificial Intelligence Innovation and Application
- Shanghai
- Chongqing
- Shenzhen

## 2. Policy Information Analysis - Access management

### MIIT: Notice on Carrying out Pilot Work for Access and Road Access of Intelligent Connected Vehicles (Draft for Comments)

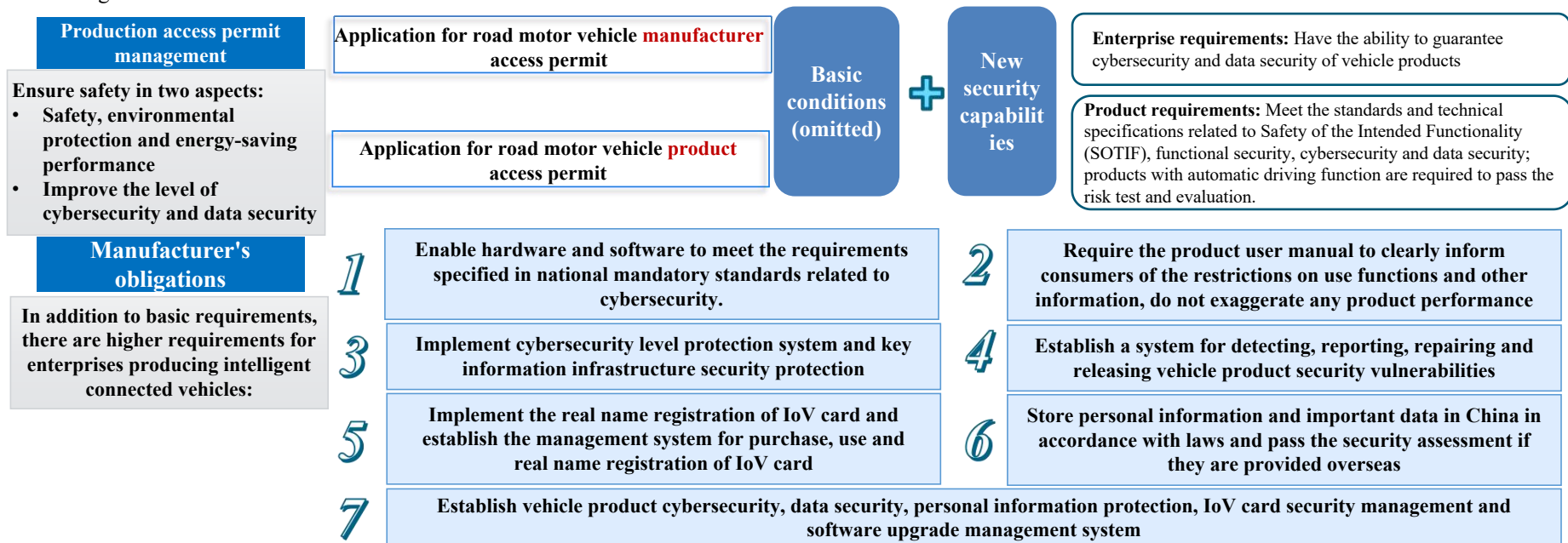
On November 2, 2022, the First Equipment Division of MIIT publicly solicited opinions on the Access Pilot, while the deadline for solicitation is December 1, 2022.



## 2. Policy Information Analysis - Access management

### MIIT: Regulations on Administration of Production Access Permit for Road Motor Vehicles (Draft for Comments)

On October 28, the First Equipment Industry Division of MIIT issued the "Regulations on Administration of Production Access Permit for Road Motor Vehicles (Draft for Comments)", which added **new management requirements on cybersecurity and data security** for motor vehicle manufacturers producing intelligent connected vehicles.





## 2. Policy Information Analysis - Data security

### National Information Security Standardization Technical Committee: **Information Security Technology - Security Requirements for Processing Vehicle Data (GB/T 41871-2022)**

"Information Security Technology - Security Requirements for Processing Vehicle Data", as the supporting technical document of Several Provisions on Automobile Data Security Management (Trial) (No. 7 Order), puts forward specific Requirements for enterprises to implement the regulations on data security protection in automotive industry.

### Evolution of Standards

The official release of this document has four versions, which took one and a half years from the initial consultation to the final official release.

Information Security Technology - Connected Vehicles - Safety Requirements for Data Acquisition  
GBT 1<sup>st</sup> solicitation for comments



Safety Guide for Automobile Data Acquisition and Processing  
TC260 technical document released



Information Security Technology - Safety Requirements for Processing Vehicle Data  
GBT 2<sup>nd</sup> solicitation for comments



Information Security Technology - Safety Requirements for Processing Vehicle Data  
GBT officially released



2021.04.28



2021.10.08



2021.10.19



2022.10.14

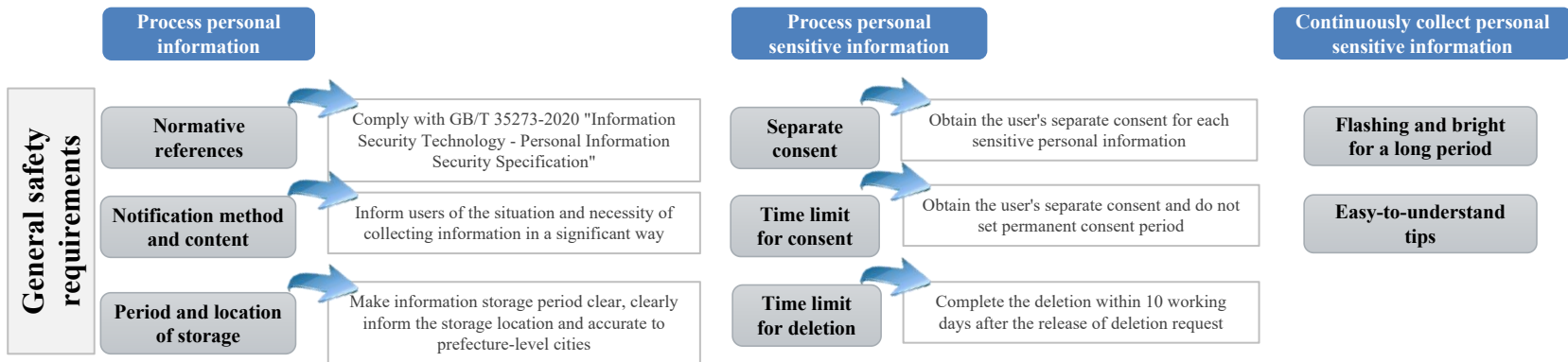
The two versions have the same contents.

# 2. Policy Information Analysis - Data security

## National Information Security Standardization Technical Committee: **Information Security Technology - Security Requirements for Processing Vehicle Data (GB/T 41871-2022)**

Standard contents

01



02

**External data security requirements**

- ✓ If personal information outside the vehicle can not be collected and provided to the outside of the vehicle with personal consent due to the need to ensure safe driving, it shall be **treated anonymously**.
- ✓ **Anonymization method:** Complete deletion, local contour processing

03

**Cabin data security requirements**

- ✓ **Default not to collect:** Unless the driver sets it independently, the car does not collect cabin data by default (**the driver can set the data collection status independently**)
- ✓ **In-vehicle processing:** Cabin data is processed in vehicle and can not be transmitted to external. **Exceptions: voice commands, cloud storage, remote viewing and supervising, etc.**

04

**Management safety requirements**

- ✓ Carry out risk analysis and evaluation on vehicle data processing activities and set up a person in charge of data security management
- ✓ **Grasp the behavior of suppliers in processing vehicle data and carry out restraint and supervision**

## 2. Policy Information Analysis - Data security

### National Technical Committee of Auto Standardization (NTCAS): **GB/T Intelligent Connected Vehicles - General Requirements for Data**

#### Main contents



#### EXCEPTION

#### General requirements (omitted)

#### Personal information

##### Obtain Individual consent

- ◆ The basic information of processing personal information shall be informed in a significant way (including pop-ups and product manuals etc.).
- ◆ Refusal options shall be provided for individuals.
- ◆ The sensitive personal information shall be processed with separate consent, while the consent period shall be set independently.

##### Exception:

- ◆ Improve driving safety without data transmission outside the vehicle, such as **driver attention monitoring**
- ◆ For **accident** or **emergency rescue**
- ◆ Publicized personal information and other two categories

##### Collection of personal information

Determine the sensor parameters by the data accuracy requirements of the functional services provided

##### Use, storage and transmission

- ◆ Conduct access control and encryption of data, make the password technology and data transmission channel used to meet the corresponding requirements
- ◆ Requirements for anonymous processing of personal information without consent

#### Review and evaluation requirements (omitted)

#### Important data

##### Data collection

Determine parameters of sensors such as camera based on functional requirements

##### Storage and usage

Develop access control mechanism and use password technology

##### Data transmission

Protection requirements, password requirements, transmission channel requirements

##### Data deletion

##### Outbound data transfer

##### Data processing record

#### Key points

- ❑ Propose technical requirements for data storage, use, transmission, access control and encryption
- ❑ Propose applicable requirements for sensor parameters and function matching accuracy
- ❑ Propose several exceptions that shall be agreed by the user, such as driver monitoring and emergency rescue, etc.

## 2. Policy Information Analysis - Data security

### National Technical Committee of Auto Standardization (NTCAS): GB/T Intelligent Connected Vehicles - General Requirements for Data - Data Classification and Hierarchical Mapping Table

Name of First Classification	Name of Second Classification	Hierarchical Mapping	Name of First Classification	Name of Second Classification	Hierarchical Mapping	
Basic vehicle data	Vehicle recognition data	S1/S0	Perception data	Lidar data	Personal biometric data outside the vehicle S2; Personal non-biological characteristic data outside the vehicle S1; Other vehicle license plate S2; Other vehicle information other than license plate S0; Personal biometrics (face, voice print, fingerprint, etc.) in the vehicle S2; Traffic information data such as traffic flow and pedestrian flow S3; Natural condition data S0; Surveying and mapping data S3; Track data S2: single point position data (elevation excluded) S1/S2	
	Vehicle attribute data	S0		Millimeter wave radar data		
	Core part identification data	S1		Camera data		
	Vehicle identification data	S1/S2		Ultrasonic radar data		
	Vehicle maintenance data	S1/S2		IMU data		
Decision data	Human driver operation data	Gear information S2		High-precision map data		
		Accelerator pedal aperture S2		GNSS data		
		Braking pedal aperture S2		V2X data		
		Steering wheel angle S2		Voice		
		Remote operation data		S1/S2		Post-integration target (motor vehicles and other road traffic participants) data
	System decision data	AD system request - gear S2		AD system request - transverse and longitudinal acceleration S2		Post-integration traffic information data
		AD system request - steering angle S2		AD system request - steering torque S2		Post-integration natural condition data
		AD system request - steering torque S2		AD system request - longitudinal moment S2		Post-integration road attribute data
		AD system request - longitudinal moment S2		AD system request - Vehicle light/wiper status S2		Post-integration ego vehicle body attitude
		AD system request - Vehicle light/wiper status S2				Post-integration ego vehicle position data
				Semantics		
				Voiceprint		
				Data collected by other sensing components		
				Other perceived integration data		

## 2. Policy Information Analysis - Data security

### National Technical Committee of Auto Standardization (NTCAS): GB/T Intelligent Connected Vehicles - General Requirements for Data - Data Classification and Hierarchical Mapping Table

Name of First Classification	Name of Second Classification	Hierarchical Mapping	Name of First Classification	Name of Second Classification	Hierarchical Mapping
Operating data	Vehicle status data	Power-on and charging state S2	Other data	User behavior aggregation analysis data	S1/S2
		Control, power mode S2		User identity mark data	S1
		Gear information S2		User-cabin interaction data (non-control data)	S1
		Braking status S2			
		Light, wiper and safety belt status S2			
		Battery SoH S2			
		Current oil and electricity volume data S2			
		Cumulative mileage data S2			
	System and component operation status data	Real-time speed S2			
		Transverse and longitudinal acceleration S2			
		Heading angle S2			
		Yaw, roll, pitch angular velocity S2			
		Average and instantaneous fuel/power consumption S2 etc.			
		GNSS operation status S2			
	System and component operation status data	IMU operation status S2			
		AD system operation status S2			
		OBU operation status S2			
		Operation status of various sensors S2			
	Security log data	S2			
	Other log data	S1			
Automobile charging network operation data	S2/S3				

**The ICV data classification shall assess the hazard degree and importance.**

**Hazard degree:** Considering the impact on national security, public interest and personal rights and interests, it can be divided into Serious, Medium, Mild and No Impact.

**Importance:** Considering the cost of investment, importance to expected goals and possible benefits, it can be divided into Extreme High, High, Medium and Low.

	S0	S1	S2	S3
<b>Hazard degree</b>	Serious	Medium	Mild	No impact
<b>Importance</b>	Extreme High	High	Medium	Low

## 2. Policy Information Analysis - High-precision map

### Shanghai Municipal Bureau of Planning and Natural Resources: Provisions of Shanghai Municipality on Pilot Management of High-Precision Maps Used for Intelligent Connected Vehicles (Draft)

On October 26, Shanghai Municipal Bureau of Planning and Natural Resources drafted the “Provisions of Shanghai Municipality on Pilot Management of High Precision Maps Used for Intelligent Connected Vehicles” (Draft) for solicitation of public comments.

<b>Purpose</b>	Standardize high-precision map management in ICV test and application activities, serve the development of ICV industry and ensure the security of geographic information data		
<b>Basis</b>	“Surveying and Mapping Law of the People's Republic of China”	“Regulations on Map Management”	“Measures of Shanghai Municipality on the Administration of Testing and Application of Intelligent Connected Vehicles”
<b>Scope of application</b>	<b>Application:</b> Carry out high-precision map <b>data acquisition, storage, transmission, processing, production, achievement use</b> and other activities as well as related <b>supervision and management</b> in ICV test and application activities in Shanghai. For the management of advanced auxiliary driving maps on ordinary roads in Shanghai, please refer to the Provisions.		
<b>Basic principle</b>	Inclusive innovative	Safe and controllable	Legal and orderly
<b>Regulatory authorities</b>	<b>The municipal and district planning and resource authorities</b> are responsible for the supervision and management of high-precision maps and shall strengthen the work coordination with the municipal authorities in charge of development and reform, economic informatization, transportation, public security and others.		

## 2. Policy Information Analysis - High-precision map

### Shanghai Municipal Bureau of Planning and Natural Resources: Provisions of Shanghai Municipality on Pilot Management of High-Precision Maps Used for Intelligent Connected Vehicles (Draft)

#### Provisions



#### Data collection and production

01 Surveying and mapping qualification

02 Multi-source data collection

03 Data production and expression



#### Map review

04 Safety review

05 Map review

06 Incremental update

07 Inform commitment



#### Data security

08 Data storage and transmission

09 Platform construction

10 Requirements for use of achievements



#### Map service

11 Government services

12 Catalogue summary, delivery and disclosure

13 Standard construction

#### 01 Surveying and mapping qualification

Domestically-funded enterprise

Get qualification by itself

Foreign enterprise

Driver and passengers

or

Entrusted qualified graphic supplier

Entrusted qualified graphic supplier

Non-surveying and mapping actor

#### 02 Multi-source data collection

Ensure data security

Explore multiple sources for data collection

Technical means:  
Real-time encrypted transmission and security check

#### 03 Data production and expression

Explore the expression in the form of **classification** and **gradation**

#### 05 Map review

Explore and study the technology of **rapid drawing review** and **hierarchical classification review**

#### 06 Incremental update

Incrementally update the content directory and file it every three months

#### 10 Requirements for use of achievements

These enterprises using high-precision map results shall guarantee the data security in the use process in strict accordance with the self-declaration for security.

#### 07 Inform commitment

Explore the implementation of map review for high-precision maps by means of informing commitment and make administrative approval decisions on the spot

## 2. Policy Information Analysis - High-precision map

### Shenzhen and Guangzhou: Issued the urban advanced driving assistance map license for the first time

The urban advanced auxiliary driving map license was issued in Guangzhou and Shenzhen for the first time, while Baidu was approved in the first batch.

Now

The pilot assisted driving function has covered **highways** and **urban expressways** in some cities.



**Baidu Map** will support auto enterprises to mass produce the intelligent vehicles provided with urban pilot assisted driving function.

Future

**Urban roads** will meet the application scenario of intelligent assisted driving for single vehicle and realize the integration of parking, highway and city.

Baidu Map

- **96%** of data processing links have been AI oriented, with road coverage more than **11 million kilometers**, global POI coverage of **180 million** and daily positioning volume exceeding **150 billion times**.
- It has achieved cooperation with **GAC, NIO, WELTMEISTER, Chang'an, Honda, Great Wall, Geely, BAIC, JAC** and many other auto manufacturers for mass production.
- It is estimated that the carrying capacity of Baidu's advanced auxiliary driving maps will exceed **1 million vehicles** by 2023.

Significance

- The issuance of such license is a major practice of the pilot implementation of high-precision map applications for ICVs.
- It is helpful to form the path and demonstration mode of map safety application technology related to automatic driving that can be copied and promoted nationwide.



## 2. Policy Information Analysis - Local policies

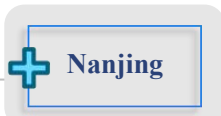
### MIIT: Support the establishment of national AI innovation and application pilot areas in Nanjing, Wuhan and Changsha

The Ministry of Industry and Information Technology officially replied to the people's governments of Jiangsu Province, Hubei Province and Hunan Province to support the establishment of the National AI Innovation and Application Pilot Area in Nanjing, Wuhan and Changsha.

8 pilot areas established previously



- **Advantages:** Solid industrial foundation and strong infrastructure
- **Strengthen industry:** Intelligent sensors, intelligent chips and information security, etc
- **Expand application scenarios:** Intelligent manufacturing, intelligent home, intelligent engineering machinery, intelligent cultural innovation and intelligent security



- **Advantages:** Rich science and education resources, solid foundation of software industry
- **Transformation and upgrading:** Power, petrochemical, steel, automobile and other traditional fields
- **Technical breakthrough:** Basic core technologies such as artificial intelligence chip, intelligent software and open-source framework
- **Regional linkage in the Yangtze River Delta:** Strengthen complementary advantages with leading regions such as Shanghai and Hangzhou



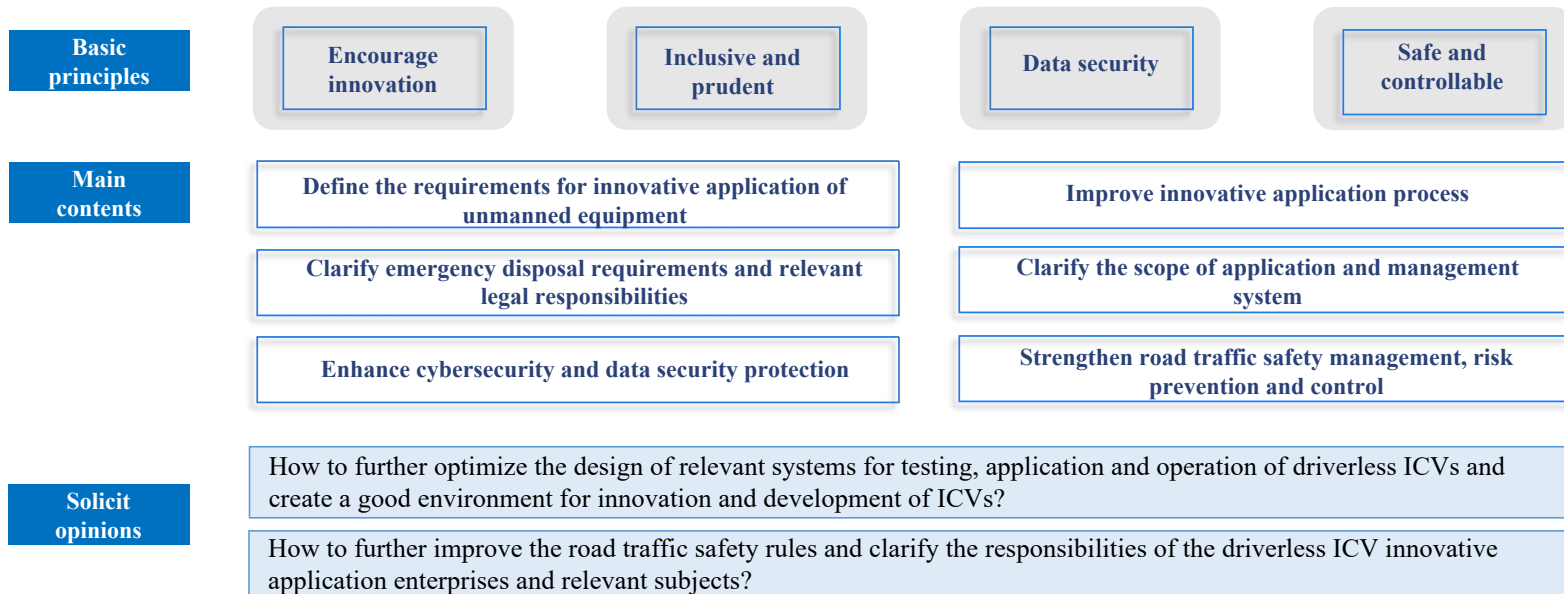
- **Positioning:** Intersection of the rise of central China and the Yangtze River Economic Belt
- **Features:** Focus on old industrial bases and emerging industrial bases at the same time
- **Expand application scenarios:** Intelligent manufacturing, intelligent construction, intelligent education and intelligent medical
- **Accelerate regional linkage:** Data opening and sharing in East Lake District, Economic Development Zone and Airport Development Zone

The number of national AI innovation and application pilot areas has increased to 11 until now.

## 2. Policy Information Analysis - Local policies

### Standing Committee of the Shanghai Municipal People's Congress: **Regulations on Promoting Innovative Application of Intelligent Connected Vehicles in Pudong New Area in Shanghai (Draft)**

On November 1, the General Office of the Standing Committee of the Shanghai Municipal People's Congress issued the "Regulations on Promoting Innovative Application of Intelligent Connected Vehicles in Pudong New Area in Shanghai (Draft)" to solicit opinions from the society for further study and modification. Then, the Regulations will be submitted and discussed at the meeting of the Standing Committee of the Shanghai Municipal People's Congress for deliberation in future.



## 2. Policy Information Analysis - Local policies

### General Office of Chongqing Municipal People's Government: **Chongqing Action Plan for Innovative Application of Automatic Driving and Internet of Vehicles (2022-2025)**

On September 29, the General Office of Chongqing Municipal People's Government issued and printed the "Notice on Chongqing Action Plan for Innovative Application of Automatic Driving and Internet of Vehicles (2022-2025)".

#### Development goals

*By the end of 2025*

Chongqing has reached the leading level in western China in terms of service efficiency, technical capacity and coverage of intelligent connected new energy vehicle infrastructure network.  
More than **1000km** of V2X roads have been built, more than **1200** intelligent connected road testing facilities have been added and more than **500km** of intelligent highways have been constructed.

#### Key tasks

(1) Accelerate the construction of energy infrastructure

Accelerate the planning and layout of the charging and battery swapping network; accelerate the construction of charging and battery swapping infrastructure projects; accelerate the construction of public service platform; accelerate and promote the application of new technologies; accelerate the construction of hydrogen energy network; and promote the integration and communication of "three networks"

(2) Accelerate the construction of vehicle-road-cloud integrated infrastructure

Accelerate road informatization transformation; improve the construction level of smart highways; built basic data platform for high-precision map; and enhance the construction of computing infrastructure

(3) Develop power battery recycling industry

Promote cascade utilization and recycling; strengthen battery recycling evaluation and quality supervision

(4) Optimize service guarantee system

Promote the integrated development of "filling, storage and parking"; study and prepare technical standards; improve detection service capability; improve the safety supervision system; and create a post-market service system

## 2. Policy Information Analysis - Local policies

### General Office of Chongqing Municipal People's Government: **Chongqing Action Plan for Building an Intelligent Connected New Energy Vehicle Part Supply Chain System (2022-2025)**

#### Development goals

*By 2025*

Chongqing has basically built a relatively complete, focused and national leading part supply chain system for intelligent connected new energy vehicles for the purposes of striving to build **one of Top-10 enterprises** and **a batch of national leading** part enterprises, breaking through a batch of key technologies and forming a batch of single products with the larger market share in the whole country.

- ◆ Strive to introduce **300** intelligent connected new energy auto parts enterprises
- ◆ Promote the transformation and upgrading of **500** traditional parts enterprises
- ◆ In the field of spare parts, **100** national specialized, special and new "small giant" enterprises and the scale of intelligent connected new energy auto parts industry reaching **RMB250 billion** in Chongqing

#### Key tasks

**(1) Build the parts supply chain system:** Improve key new energy parts supply chain system; cultivate intelligent driving parts supply chain; expand the scale of intelligent cabin parts; improve the supply capacity of Internet of Vehicles parts; and promote the coordinated development of basic materials industry

**(2) Introduce and cultivate high-quality enterprises:** Implement cultivation and improvement actions; accelerate and promote transformation and upgrading; vigorously carry out investment attraction; promote enterprise merger and reorganization; continuously cultivate small and medium-sized enterprises; and improve the level of intelligent manufacturing

**(3) Enhance technological innovation capability:** Strengthen key technological breakthrough; build a technology innovation platform; and promote the transformation and application of achievements

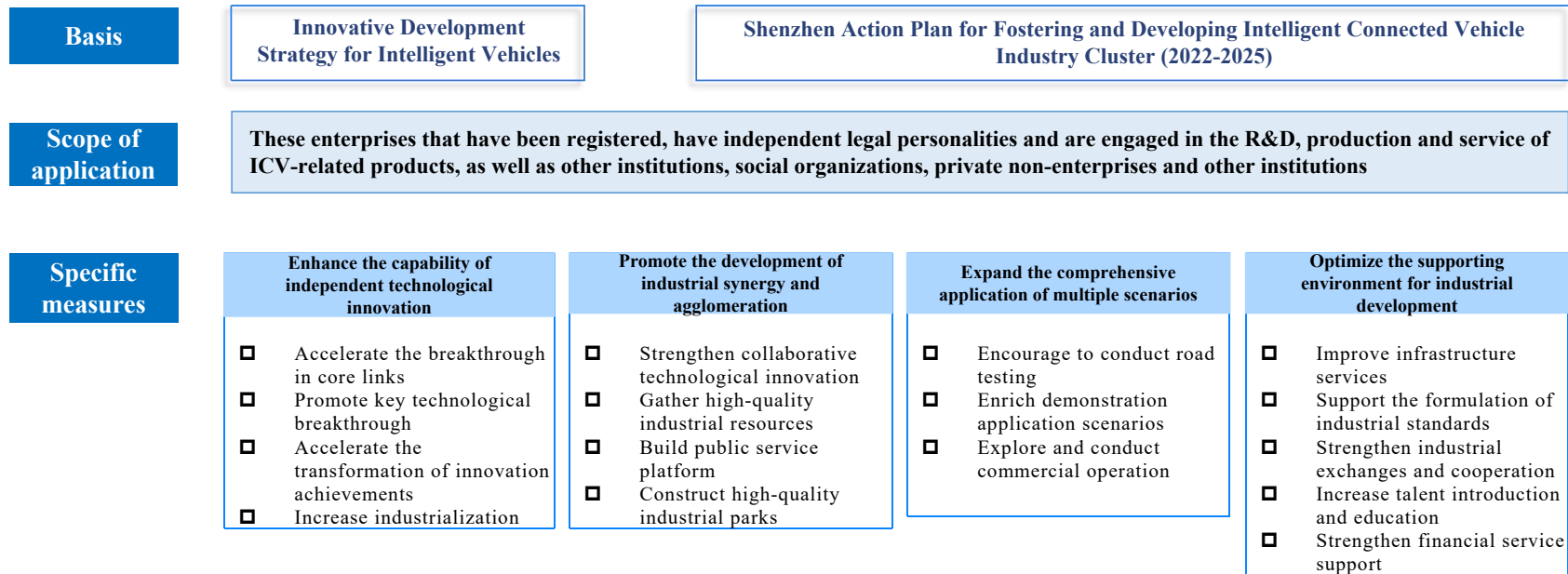
**(4) Promoting coordinated and integrated development:** Promote the coordinated development of "vehicle-part"; promote the integrated development of supply chain; and promote the integrated development of Sichuan and Chongqing

**(5) Optimize overall service capacity:** Promote the creation and construction of characteristic parks; enhance the platform service capability; and strengthen the guarantee of resource elements

## 2. Policy Information Analysis - Local policies

### Development and Reform Commission of Shenzhen Municipality: **Several Measures of Shenzhen on Promoting High Quality Development of Intelligent Connected Vehicle Industry (Draft for Comments)**

On October 11, the Development and Reform Commission of Shenzhen Municipality issued a circular on soliciting the opinions for the "Several Measures of Shenzhen on Promoting High-Quality Development of Intelligent Connected Vehicle Industry (Draft for Comments)".





**PART THREE**

## Industry trending

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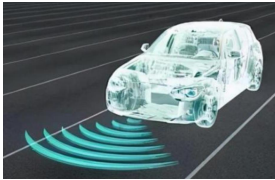
Traditional vehicle manufacturers  
Newly-established vehicle manufacturers  
IT enterprises  
Parts and components manufacturers

### 3. Industry trending

- **Vehicle manufacturers continue to deepen the strategic layout of intelligent connecting, focus on software R&D and investment and launch more high-level autonomous vehicle products equipped with self-developed or jointly-developed software. Autonomous vehicle shared mobility has begun to take shape.**



- **Strategy:** Volkswagen's CARIAD and Horizon will invest RMB16.8 billion to establish a joint venture in China. Ford set up the Electric Mach Technology Research and Development Center in China. Great Wall established a semiconductor company.
- **Product:** VOYAH Zhuiguang is equipped with a centralized EEA. Hyundai will convert all cars of the Group into software-defined cars by 2025. The joint venture jointly-developed by Honda and Sony plans to deliver electric cars with L3 automatic driving function in 2026.
- **Shared mobility:** ArcFox delivered 200 shared unmanned vehicles Apollo Moon to Baidu. Robotaxi obtained the license plate for road test vehicles in Suzhou.
- **Cloud platform:** BMW uses Amazon AWS cloud platform to manage its vehicle data. Mercedes-Benz cooperates with Microsoft to build a supply chain data platform.



Traditional vehicle  
manufacturers



CARIAD



Horizon  
Horizon Robotics

- Cooperated with Horizon Robotics to establish a joint venture in China

Volkswagen Group plans to invest about 2.4 billion Euros in this cooperation, so Volkswagen will hold 60% of the shares in the joint venture. The transaction is expected to be completed in the first half of 2023.

## Specific cooperation

- To meet the needs of the Chinese market, CARIAD will cooperate with Horizon Robotics to develop a leading and highly-optimized full-stack advanced driving assistance system and automatic driving solutions.
- Integrate multiple functions on a single chip to provide scalable, cost-effective advanced driving assistance systems and automatic driving solutions for Volkswagen pure electric vehicles in China



- Set up the Electric Mach Technology Research and Development Center in China

**Comprehensive R&D System:** Based on the electrification center, digital experience center and advanced driving assistance center

## Digital Experience Center

- Create an advanced intelligent cabin and mobile connectivity solution based on the needs of Chinese users
- Start from forward-looking user research and transformation of user experience, create the digital product development and operation team that connects vehicle end, mobile end and cloud end, and provide users with frequently-used and new personalized digital experience based on OTA software upgrade
- The C-V2X vehicle-road collaboration system will further expand its coverage, while all six Ford models under the company are equipped with this technology as standard configuration.

## Advanced Driving Assistance Center

- Cooperate with a series of local leading enterprises to develop the road and traffic environment in China and accelerate the deployment and iteration of Ford's new generation BlueCruise active driving assistance system in China

Traditional vehicle  
manufacturers



### 3. Industry trending



#### Newly-established vehicle manufacturers

Newly-established enterprises released a number of new products and continued to complete technological innovation in this month. They released mileage data related to assisted driving by adjusting enterprise structure and optimizing management method.

- **Products:** Tesla Model 3/Y will turn to pure vision automatic driving. Xiaopeng P5 Xmart OS 3.3.0 OTA pushed the urban NGP. Li L7, Li L8 and NIUTRON NV were officially launched.
- **User Mobility Report for the National Day Holiday:** "Weixiaoli" and HAOMO AI. released the data such as "Assisted driving mileage" during the National Day holiday.
- **Enterprise operation:** Xiaopeng adjusted its organizational structure. Tesla adjusted its capacity control at home and abroad, while its Chinese revenue in the third quarter was US\$21.454 billion.
- **Patent R&D:** Xiaopeng and Xiaomi have issued a number of automobile-related patents.



## Tesla Model 3/Y will remove ultrasonic radar and turn to pure vision automatic driving.

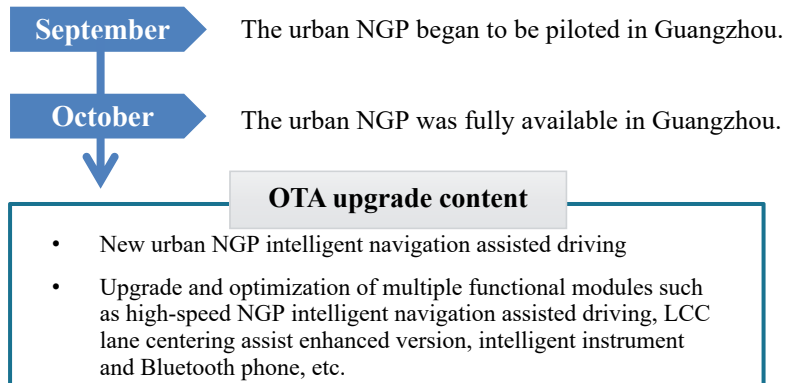
- The ultrasonic radar will also be removed from Tesla Model S and Model X from 2023.
- **Tesla will adopt 100% pure vision scheme for automatic driving in the future.**

Features*	Equipped with USS	Not equipped with USS
Forward Collision Warning	✓	✓
Automatic Emergency Braking	✓	✓
Lane Departure Warning / Avoidance	✓	✓
Emergency Lane Departure Avoidance	✓	✓
Pedal Misapplication Mitigation	✓	✓
Auto High Beam	✓	✓
Autowiper	✓	✓
Blind Spot Collision Warning Chime	✓	✓
AutoSteer†	✓	✓
Auto Lane Changes	✓	✓
Navigate on Autopilot	✓	✓
Traffic Light and Stop Sign Control	✓	✓
Park Assist	✓	Coming soon
Autopark	✓	Coming soon
Summon	✓	Coming soon
Smart Summon	✓	Coming soon

Newly-established vehicle  
manufacturers



## 1. P5 Xmart OS 3.3.0 OTA was pushed and the urban NGP was fully available in Guangzhou.



## 2. G9 passed the autopilot closed-field test in Guangzhou.

- It is a mass-produced vehicle on sale that has passed the closed-field test of automatic driving.
- The test is done at night in 31 urban road scenarios including identification and response of various indicator signals.



## L8 and L7 officially launched at the selling price of RMB339,800-399,800

Newly-established vehicle manufacturers

➤ These two models are basically the same in terms of intelligent space, intelligent driving and safety equipment, but there are minor differences in some details.



LI L8

**Selling Price:** RMB359,800-399,800

**Positioning:** Family-use Intelligent Luxury 6-seat SUV

**L\*W\*H:** 5080\*1995\*1800

### Intelligent space

- Steering wheel safety driving interactive screen
- 13.35" high-definition projection head-up display system
- 15.7" central control screen (3K resolution)
- 15.7" co-pilot entertainment screen (3K resolution)
- 15.7" rear cabin entertainment screen (3K resolution)
- Integrated seamless glass cover plate for central control screen and co-pilot entertainment screen

### LI AD Intelligent Driving Hardware Platform

- Intelligent driving processor: Nvidia Orin-X × two
- 128-line lidar
- Ultrasonic radar \*12
- Forward millimeter wave radar

### Intelligent cabin processor and sensor

- Qualcomm 8155 chip \*2
- Memory 24GB
- High-speed storage 256GB
- In-cabin sensor IR+3D ToF
- 5G dual-card high-speed communication module
- Six tone zone recognition (L8)/four tone zone recognition (L7)
- Free dialogue in the entire vehicle

### LI AD intelligent driving function

- Navigation driver assistance: Full scenario
- High-precision map
- High precision sub-meter positioning
- Lane-level navigation
- Perceived environment display
- Enhanced perception of Lidar
- Intelligent parking
- Straight line parking control



LI L7

**Selling Price:** RMB339,800-379,800

**Positioning:** Family-use Intelligent Flagship 5-seat SUV

**L\*W\*H:** 5050\*1995\*1750

*\* The functions related to navigation assisted driving will be realized via OTA and are applicable for closed roads such as highways or urban expressways covered in high-precision maps.*

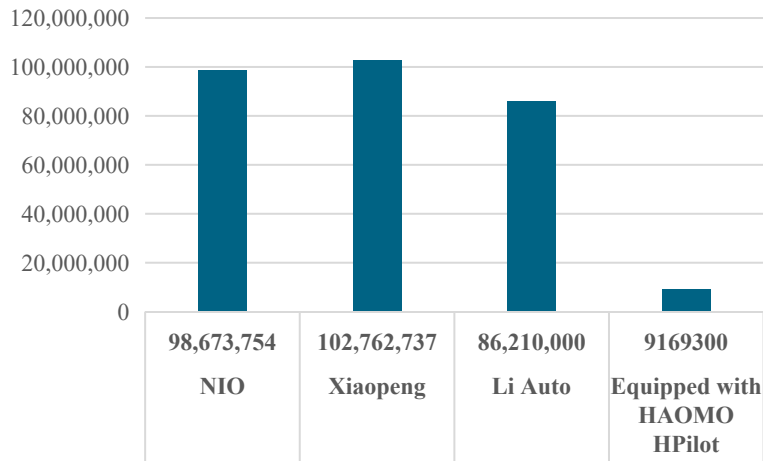
*\* Based on enhanced perception of lidar, more available areas will be opened via OTA for full-scenario navigation assisted driving.*

# User Mobility Report for the National Day Holiday

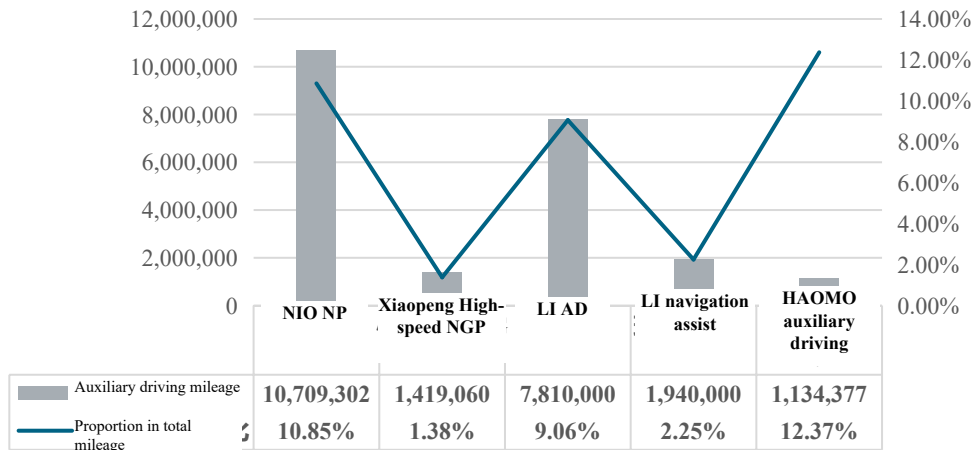
Newly-established  
vehicle manufacturers



Total mileage Unit: km



Auxiliary driving mileage and proportion Unit: km



# 3. Industry trending

**Overview:** Commercial demonstration is continuously promoted in the field of driverless taxi at home and abroad, while enterprises strength the trend of cooperation.

## / Robotaxi

### Domestic

- "Apollo Go" will start an all-unmanned test in Autonomous Driving Demonstration Area in Shanghai.
- PONI.AI cooperated with SAIC AI LAB to jointly launch an all unmanned automatic driving concept car.

### Oversea

- Waymo will provide autonomous taxi service in Los Angeles.
- Uber will cooperate with Motion to provide driverless taxi service.

## / New scheme

- **Navigation engine:** AMAP launched the navigation engine "Horizon".
- **Internet of Vehicles module:** AutoChips released the new product AC8257 Internet of Vehicles module.

## / Recombination

- **ECARX:** In response to the dismissal, it said that the news was untrue and it was business adjustment.
- **Apple:** Its auto team may be reorganized before the end of the year.

## / Financing

- **Autowise.ai:** It won the B3-round strategic investment from SenseTime Capital.
- **ABUP:** It completed B-round financing in the amount of nearly RMB100 million.
- **Seoul Robotics:** It won B-round financing in the amount of US\$25 million.

# 3. Industry trending

Continue to enrich intelligent connected vehicle part products, strengthen industrial cooperation among enterprises



## Lidar

- ◆ Hesai Technology delivered more than 10,000 lidars in September.
- ◆ Hesai Technology won the Chang'an Auto Lidar fixed-point.

## 4D radar

- ◆ OFILM will deploy Uhnder 4D digital radar in 2023.
- ◆ Arbe will work with Veoneer to jointly develop automotive-grade 4D imaging radar.

## Chip product

- ◆ STC introduced the next generation of NFC chip, which can simplify the authentication of digital car keys.
- ◆ Melexis launched a smaller fully-integrated LIN driver chip.
- ◆ Melexis released MLX81143 automotive LED driver chip.

## Chip strategy

- ◆ Renesa completed the acquisition of Steradian.
- ◆ SK was exempted from the US ban on chip exports to China.
- ◆ ARM separated auto business from IoT businesses.
- ◆ Samsung's acquisition of ARM may be shattered.

## Vehicle suppliers

- ◆ Mobileye and Geely expanded business cooperation.
- ◆ ZF and NIO will cooperate in steer-by-wire products and other fields.
- ◆ Horizon Robotics won Chery's strategic investment.
- ◆ Jingwei HIRAIN became a long-term testing supplier of Volkswagen Group.

## Investment & financing

- ◆ Mobileye was officially launched in the U.S.
- ◆ Ibeo filed for bankruptcy.

Parts manufacturers and other institutions and enterprises



**PART FIVE**

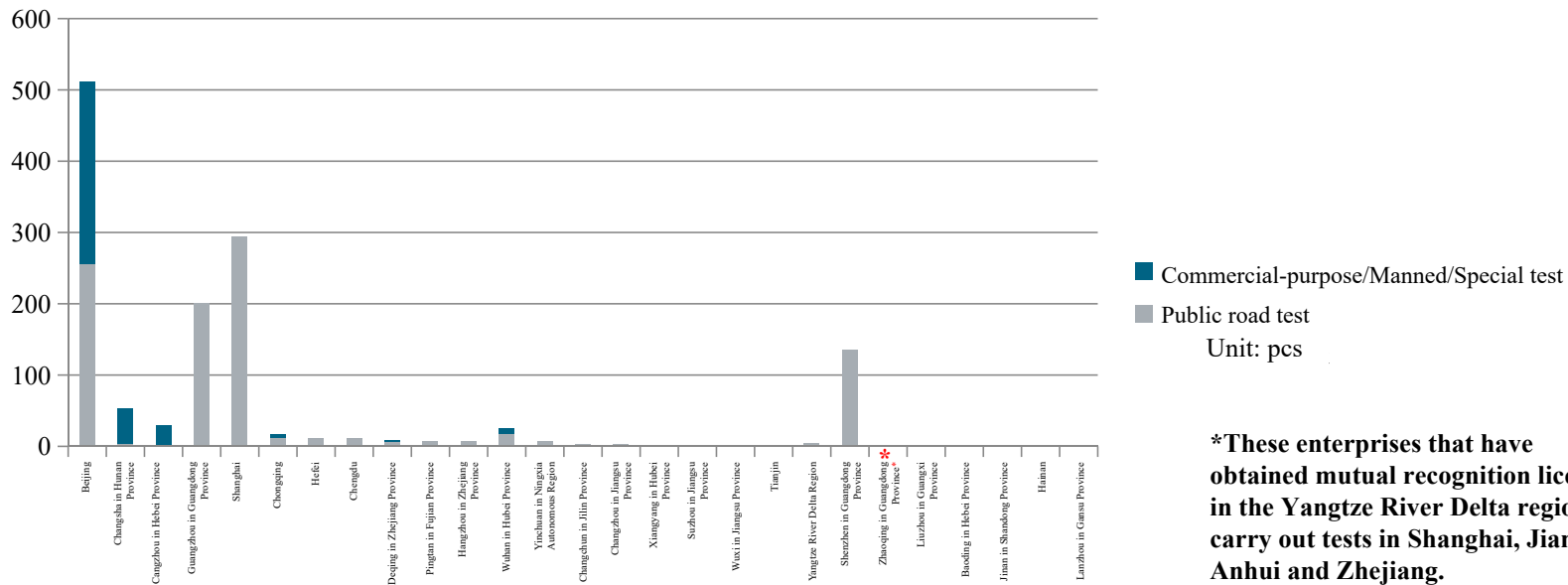
## Appendix 2: Test demonstration

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### Road Tests on ICVs in Different Places

# Appendix 2: Test demonstration

## Issuance of driving licenses for testing ICVs in various places



■ As of October 2022, based on the statistics of the China Automotive Strategy and Policy Research Center of CATARC, a total of 1,198 public road test licenses for ICVs have been issued in China.

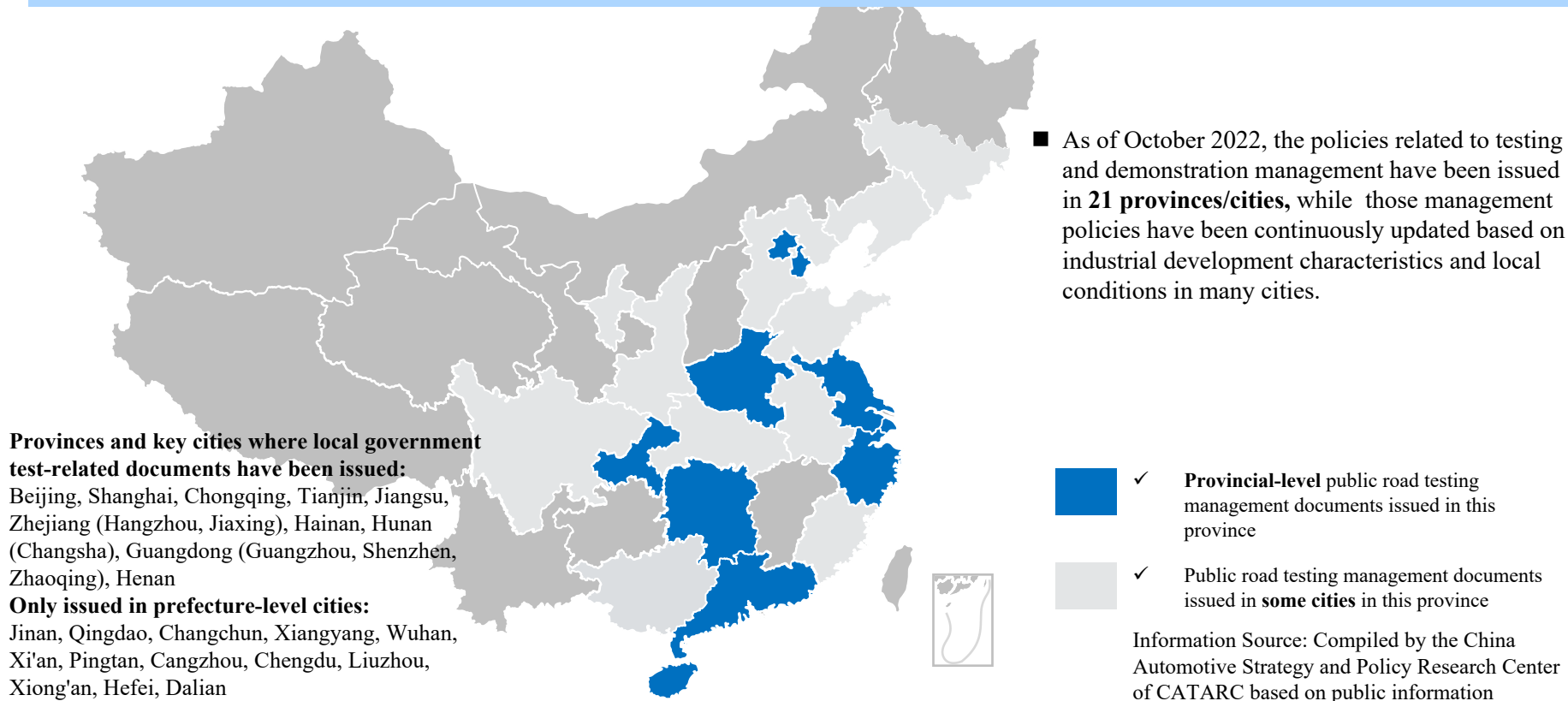
Note: For more details, please refer to the report in EXCEL file.

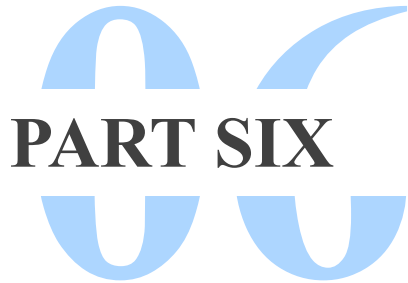
Information Source: Compiled by the China Automotive Strategy and Policy Research Center of CATARC based on public information



## Appendix 2: Test demonstration

### Overview of the issuance of local government test-related documents





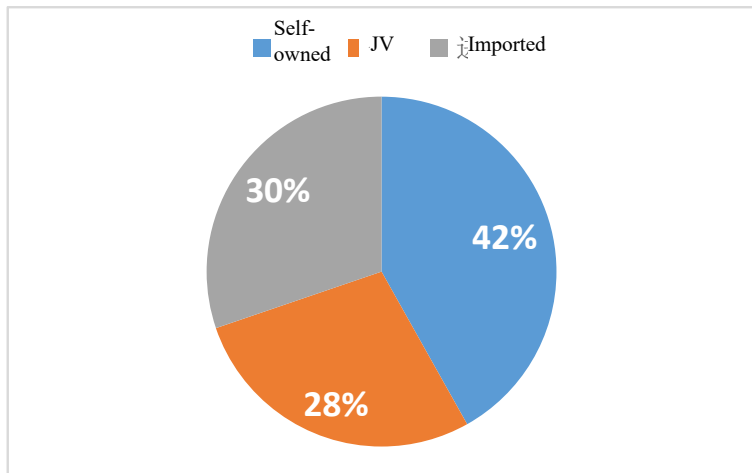
## Appendix 3: Market dynamics of ICV Products

# Appendix 3: Market dynamics of ICV Products

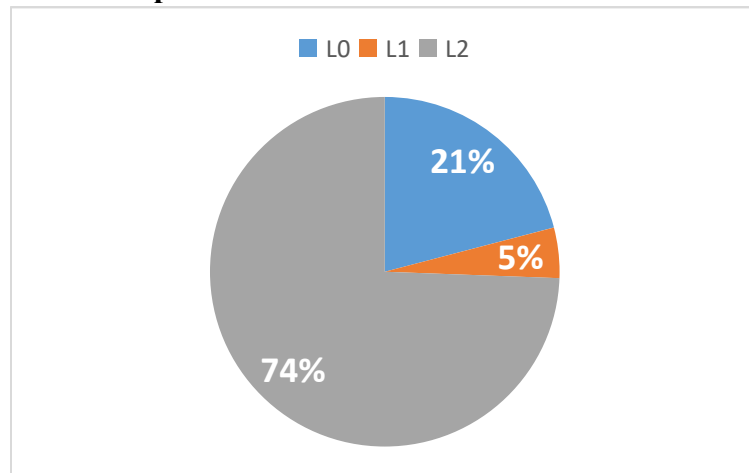
## Distribution

- According to the statistics of CATARC, 32 of the 43 new models launched in October 2022 are L2 models, accounting for 74% of all new vehicles launched on the market.

**Distribution of manufacturers launching ICV products in October 2022**



**Configuration of automatic driving functions of ICV products launched in October 2022**

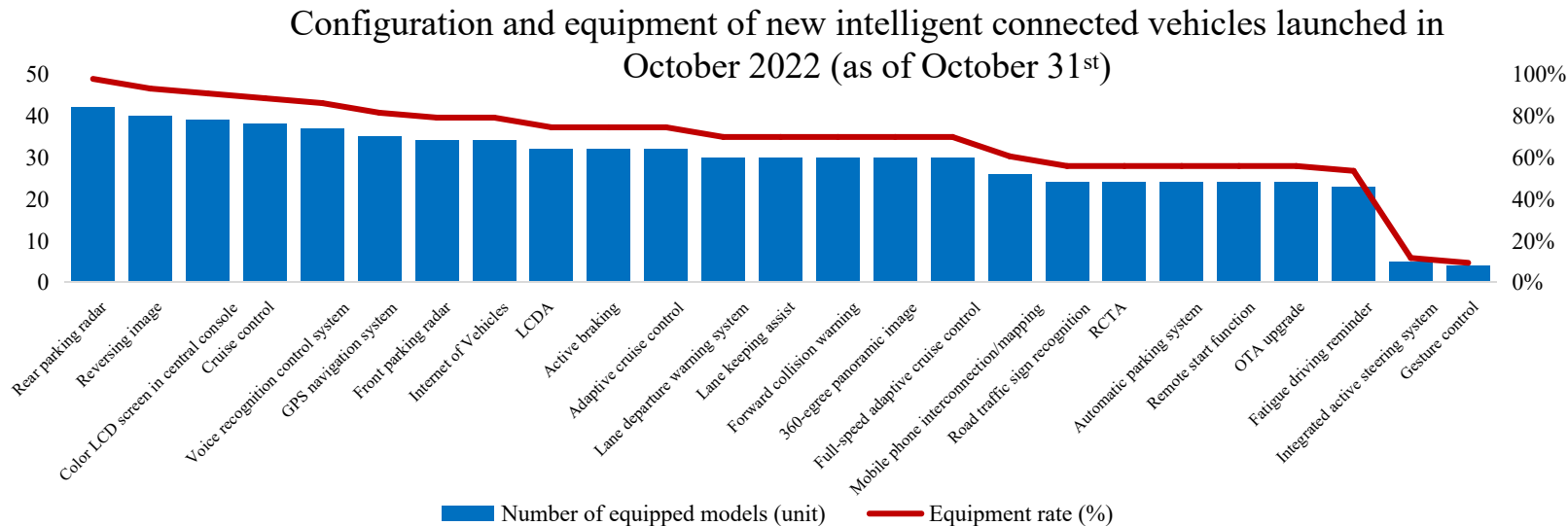


Information Source: Compiled by the China Automotive Strategy and Policy Research Center of CATARC based on public information; all models launched on the market are high-configured models for statistics

# Appendix 3: Market dynamics of ICV Products


## Configuration

- Among the new models launched in October, the driving assist function forms are more diversified and the equipment rate of parking assist systems is still high.



Note: Number of equipped models - Number of models equipped with this configuration among the products launched in the month;  
 Equipment rate - Proportion of the number of models equipped with this configuration in the number of models launched in the month

Information Source: CATARC Policy Center compilation based on public information, and top-configured market available models are selected.



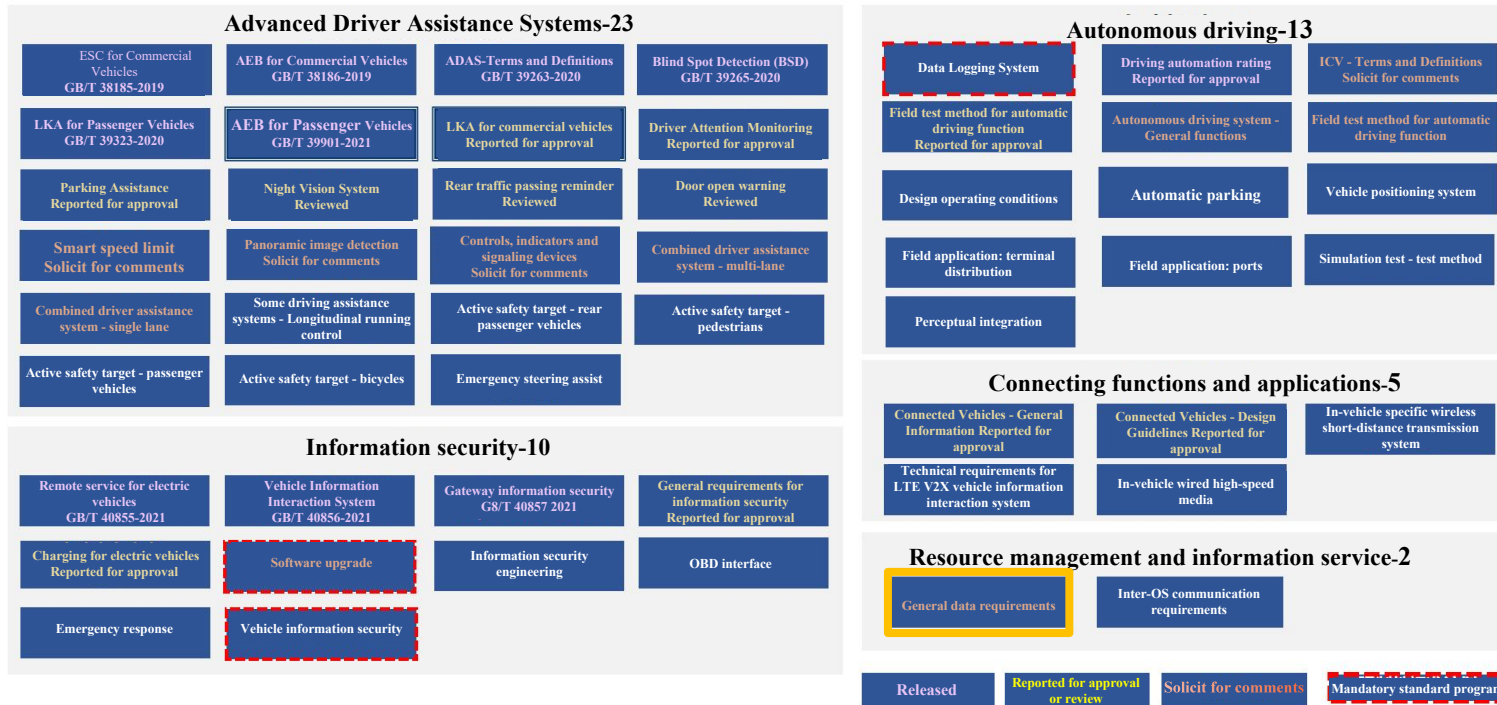
**PART EIGHT**

*Appendix 5: Legal Standards  
Tracking*

# Appendix 5: Legal Standards Tracking

- The ICV Sub-Committee of the National Technical Committee of Auto Standardization has carried out a total of 53 standard development projects, where 11 standards have been released, 10 standards have been submitted for approval or review, **10 standards have been solicited for comments** and another 22 standards are in the progress of initiation and drafting.

\* **The recommended national standard “Intelligent Connected Vehicles - General Requirements for Data” was open for comments in this month. All feedback is due on December 30.**





# Create value for our customers!



**Zhiyuan Qin**

Tel: 022-8437 0000-1639

M.P.: 18526707662

Email: qinzhiai@catarc.ac.cn



**Yu Liu**

Tel: 022-8437 0000-1632

M.P.: 13212034934

Email: liuyu@catarc.ac.cn

