



# Development of Intelligent and Connected Vehicles (ICVs) in China

Chongqing Changan Automobile Co., Ltd.

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世纪长安  
创领未来

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**1. Industrial trends**

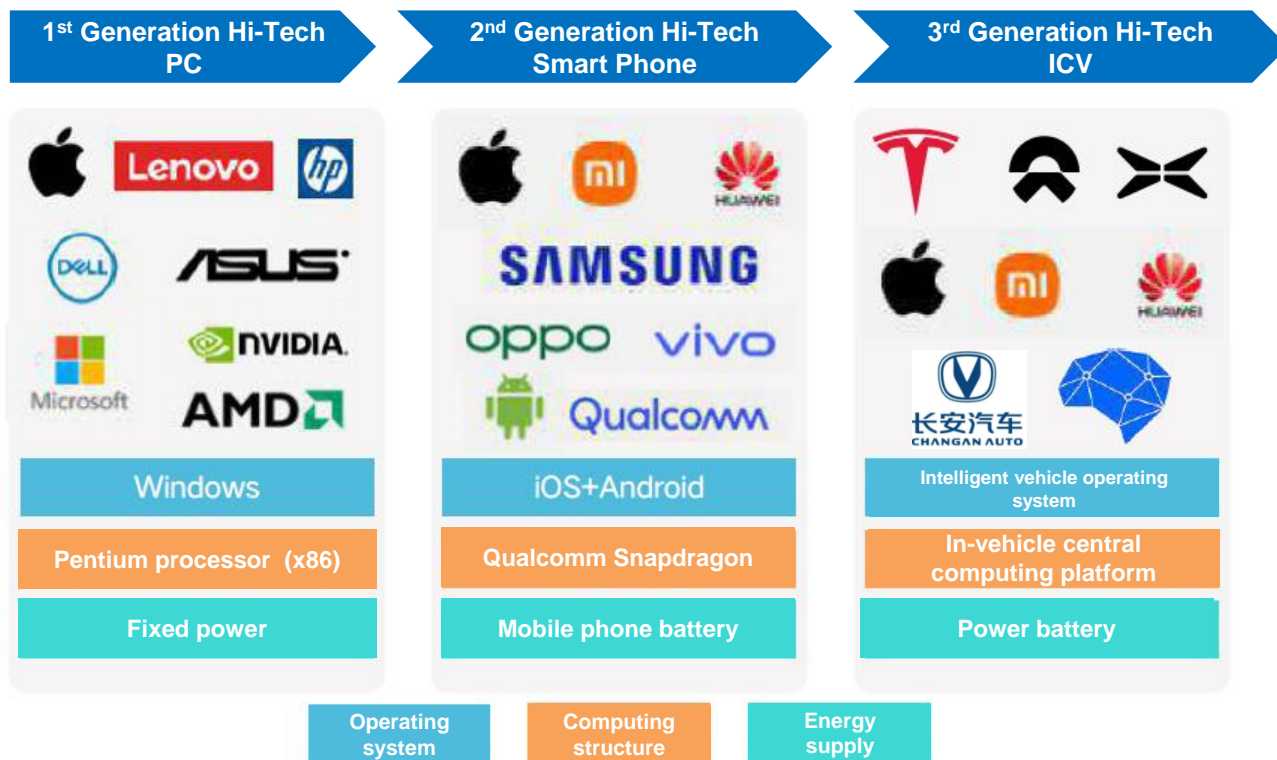
**2. ICVs in China**

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# 1. Industrial trends

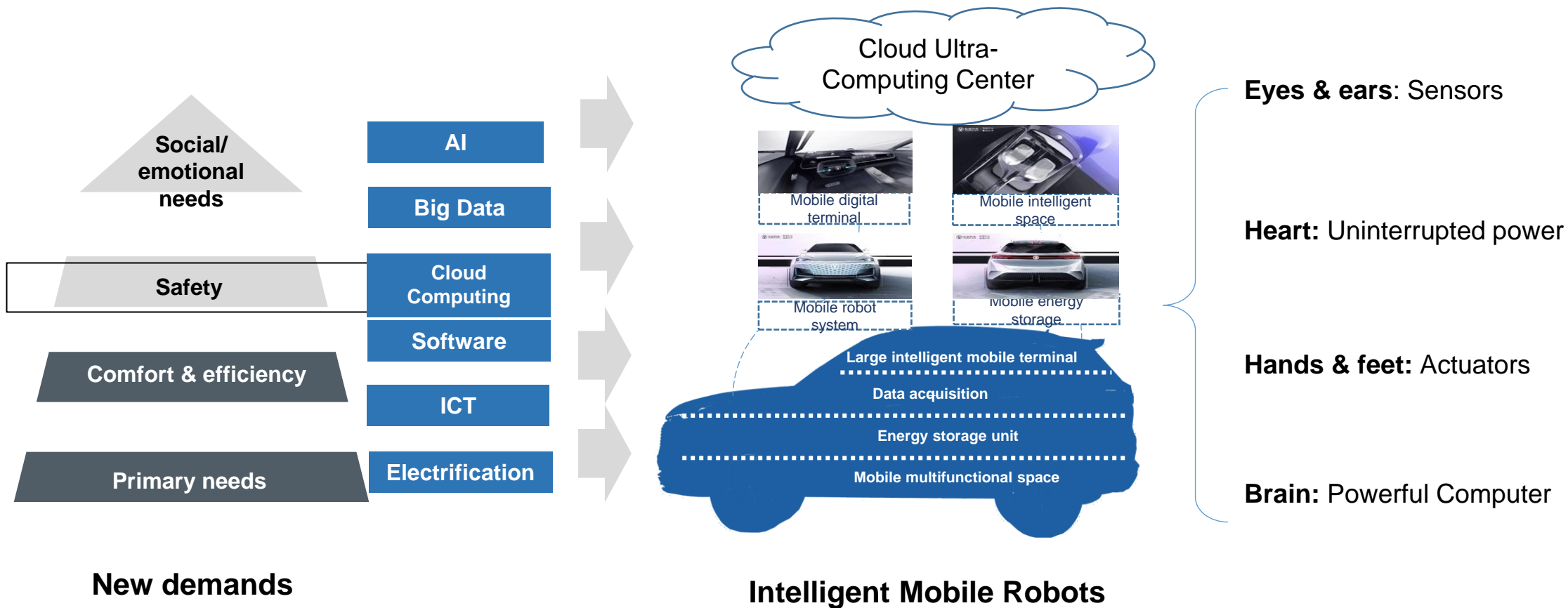
□ 1.1 ICVs will be the battlefield of the next generation of vehicles. The competition lies in digital products.

EV sales and penetration in China (10,000)



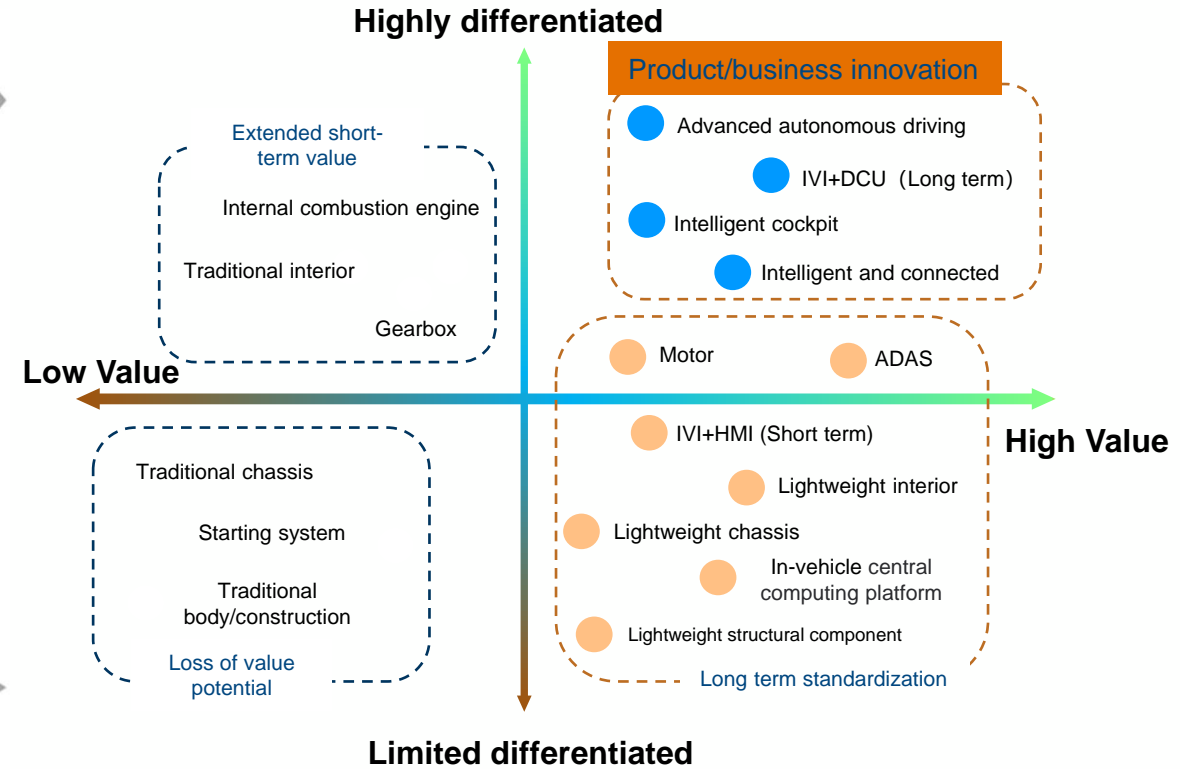
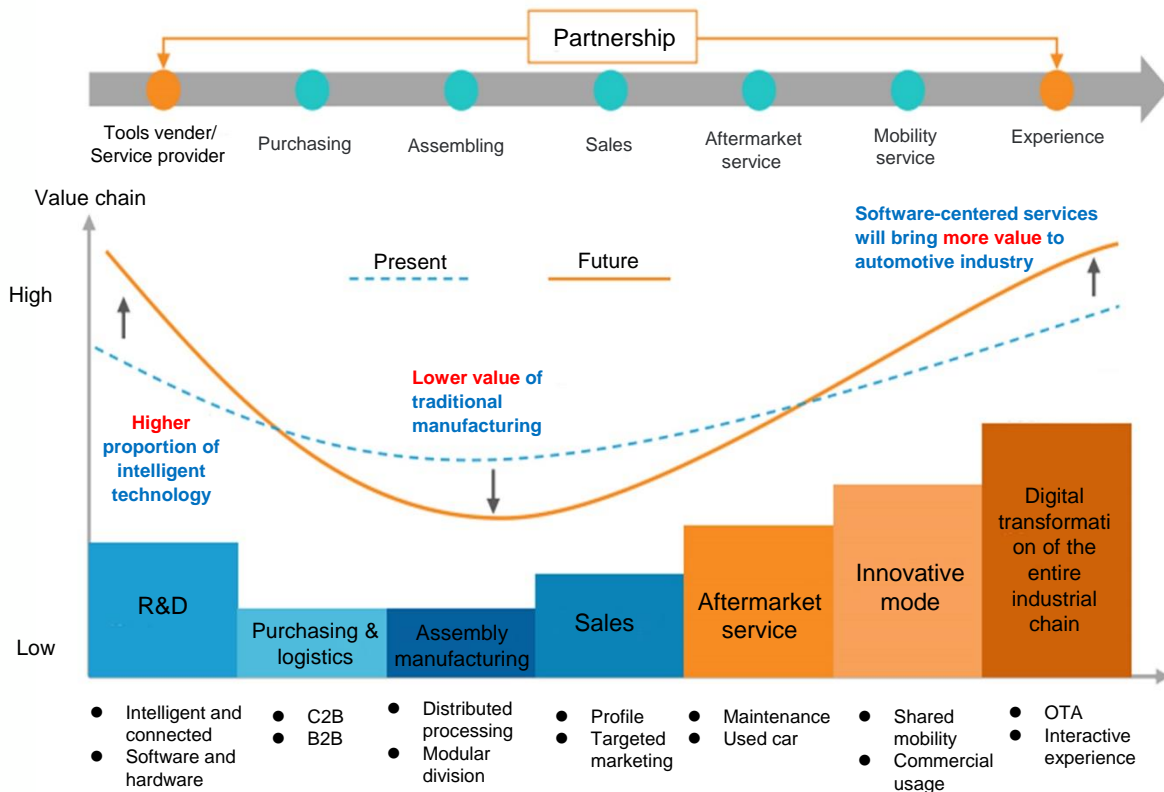
# 1. Industrial trends

## 1.2 From "Mobile Machines" to "Intelligent Mobile Robots"



# 1. Industrial trends

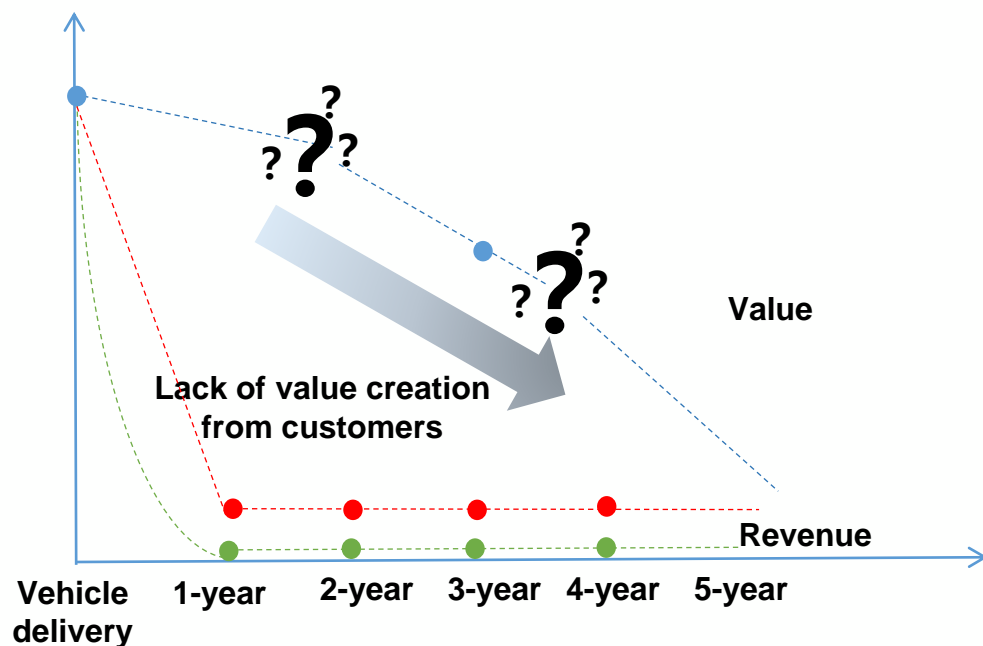
□ 1.3 The value of automobile products shifts. The curvature of the value chain “smile curve” becomes larger. Technological innovation becomes more important.



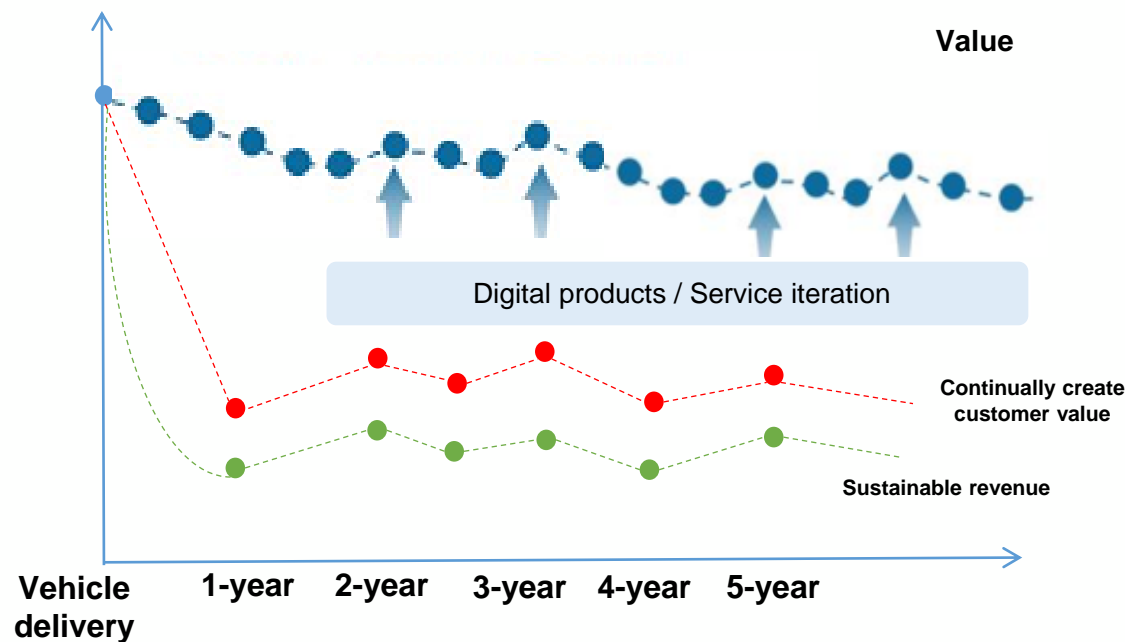
# 1. Industrial trends

□ 1.4 Through the continuous iteration of product and service, ICV opens a new channel for the industry to make profits.

Traditional automobile business



ICV business



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**1. Industrial trends**

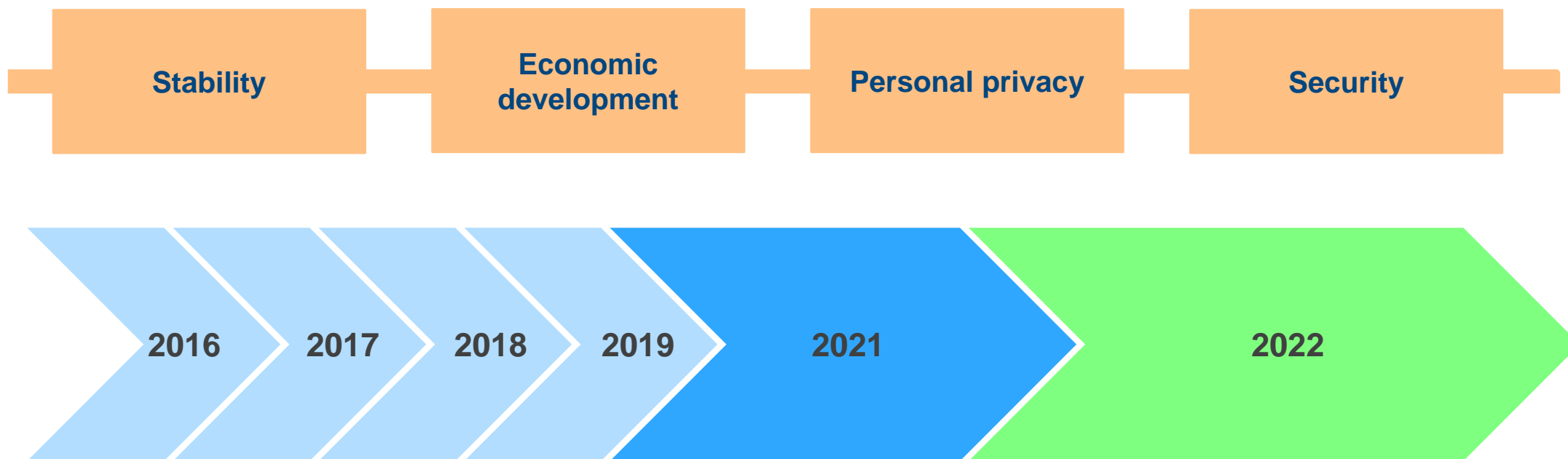
**2. ICVs in China**

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## 2. ICVs in China

### 2.1 More laws and regulations

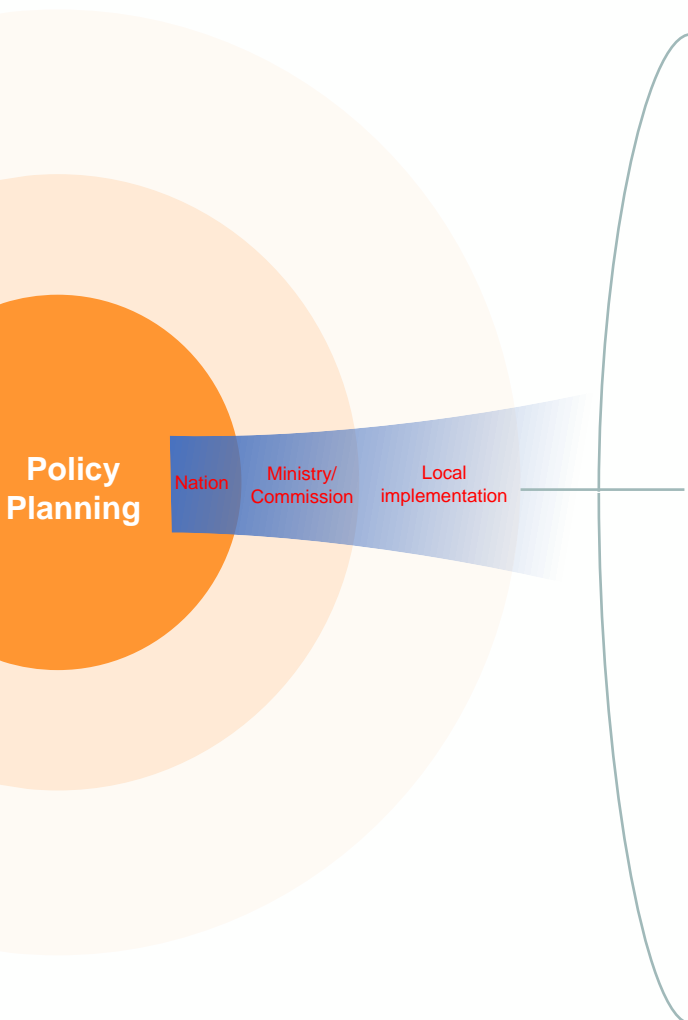
- Since the 13th Five-Year Plan, in order to promote the standardized and orderly development of ICVs, China has accelerated the formulation of information security related laws and regulations for information network and data security.





## 2. ICVs in China

### 2.2 improved local policies



#### 《Regulations of Shenzhen Special Economic Zone on the Administration of Intelligent Connected Vehicles》

##### Product catalog and registration

- ◆ Open up the whole chain of access, sales, registration and road for the first time.
- ◆ Compared with the draft version, the access issue is still prudent and strict.

##### Cybersecurity and data protection

- ◆ Form a closed-loop protection the rights and interests of personal data
- ◆ Establish special security protection
- ◆ Define the responsibilities of the municipal Data Working Committee

#### 《The approval of the request regarding the overall implementation plan of Beijing Intelligent Connected Vehicle policy pilot zone》



The first pilot zone with management policy innovation as the core

01.

Robotaxis can charge for driverless rides

03.

Road test results are identified in different places

02.

Self-driving delivery on the road

04.

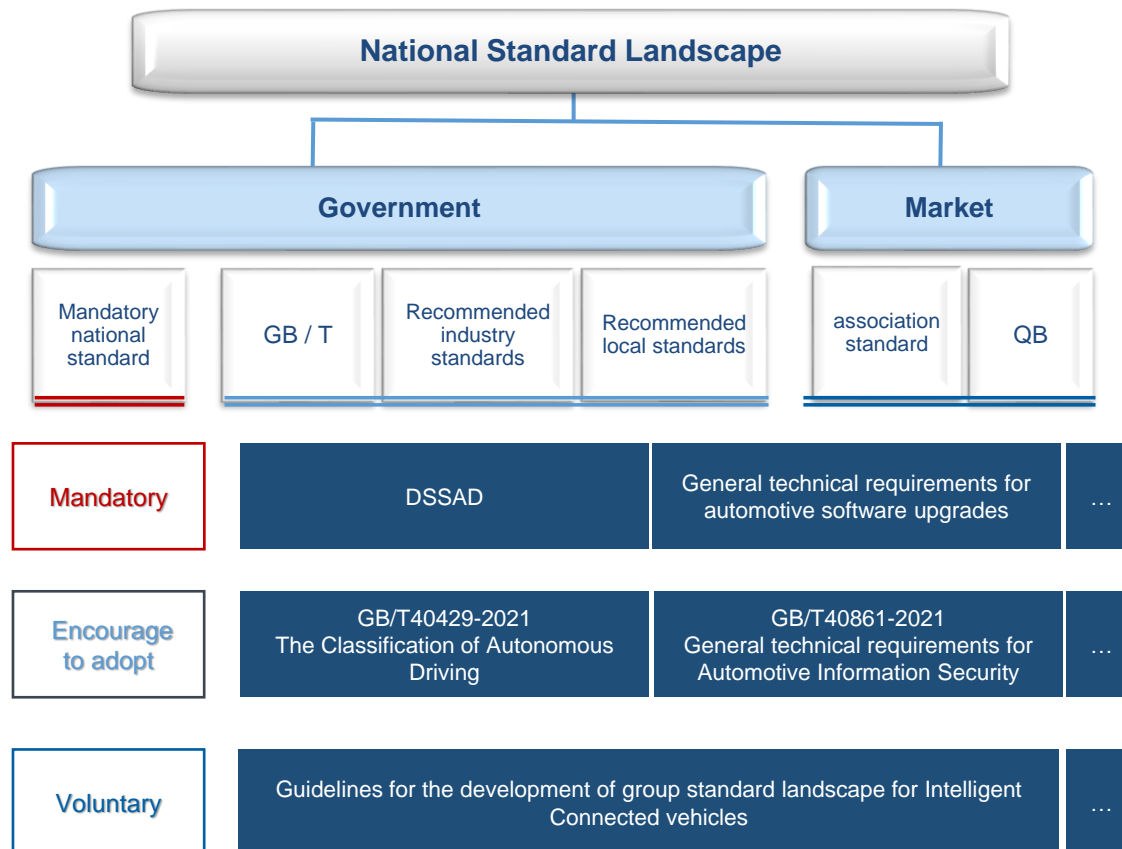
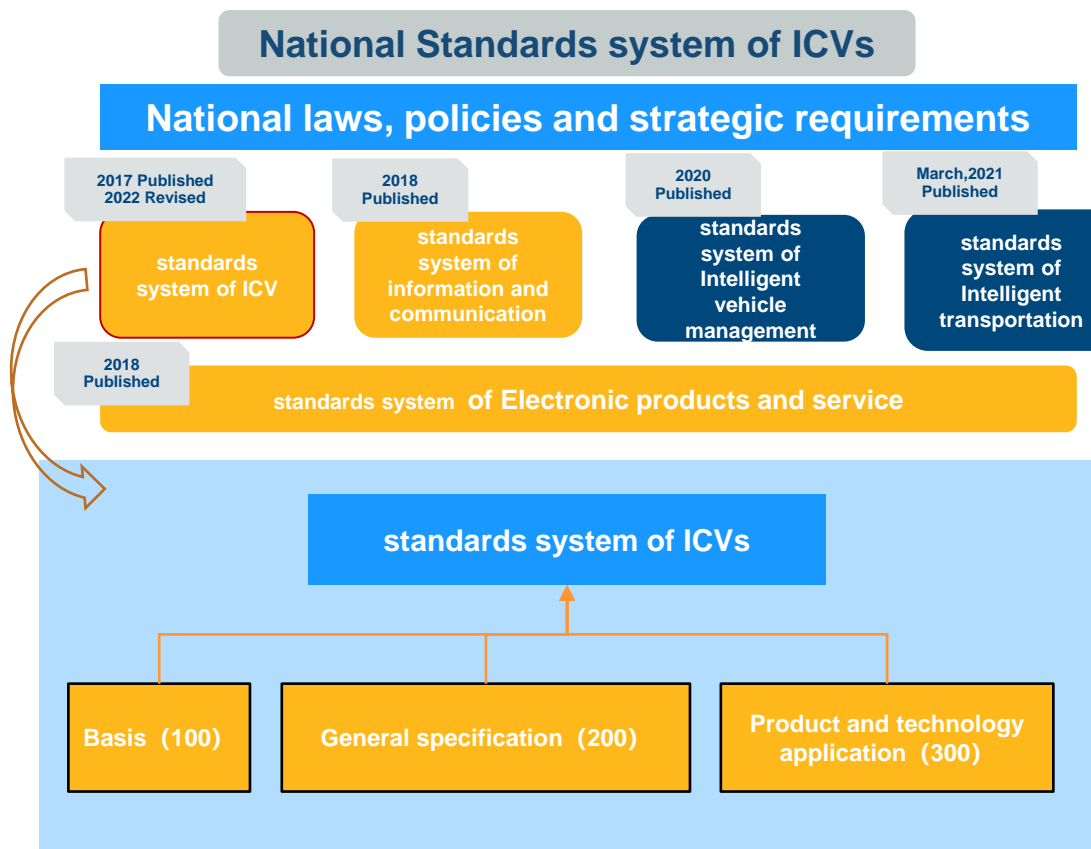
Highway test for autonomous driving vehicles

#### 《Implementation Rules of Shanghai Municipality for Demonstration Operation of Intelligent Connected Vehicles (Trial) (Draft for Soliciting Opinions)》

## 2. ICVs in China

### 2.3 Standard landscape of ICVs in China

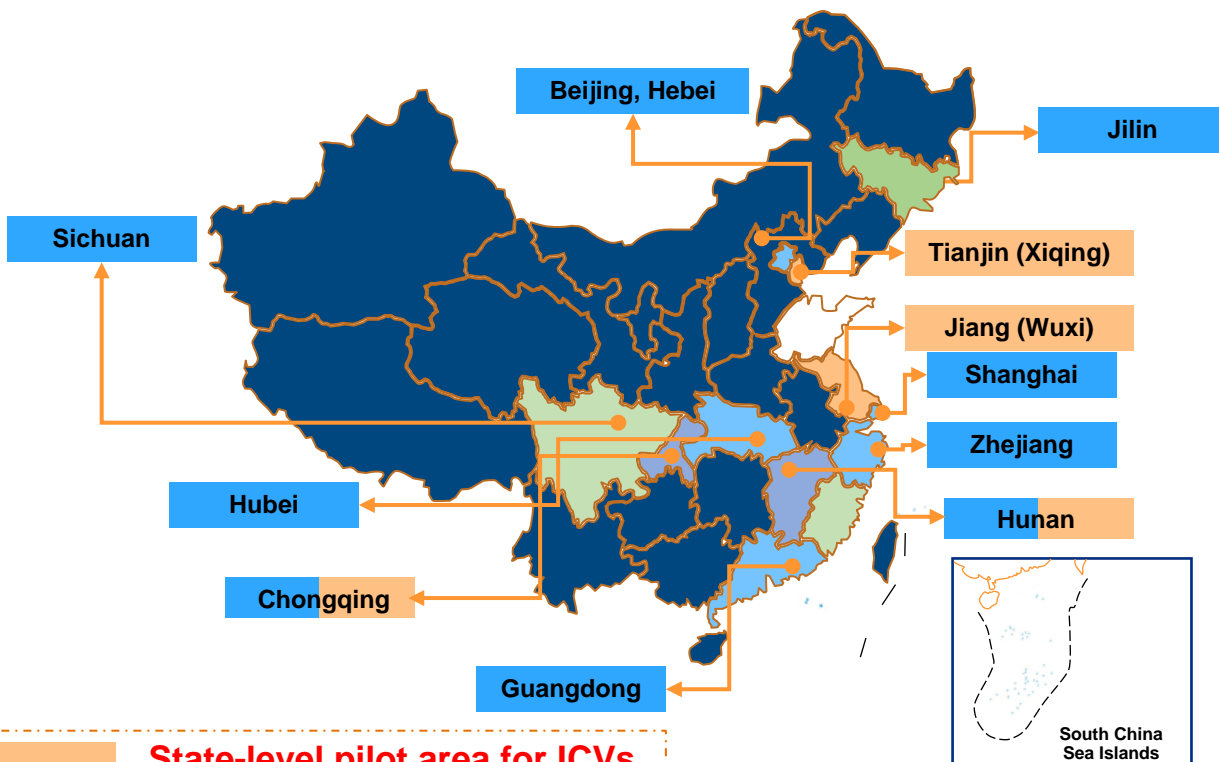
- The overall framework of the standards system has been basically established. Each sub-system has been gradually constructed and implemented accordingly.



## 2. ICVs in China

### 2.4 Increasing pilot demonstration areas

- China is actively creating state-level ICV pilot areas and demonstration areas to jointly promote the cross-industry integration of ICVs, artificial intelligence and intelligent transportation. In addition, intelligent network test and demonstration applications are also gradually carried out on expressway.



State-level pilot area for ICVs  
 Demonstration area for ICVs

#### Smart expressway



Yanchong Expressway (Winter Olympics)

Shiyu Expressway – Fufeng Section (Chongqing)



Hangshaoyong Smart Expressway

Binlai Expressway (Shandong)

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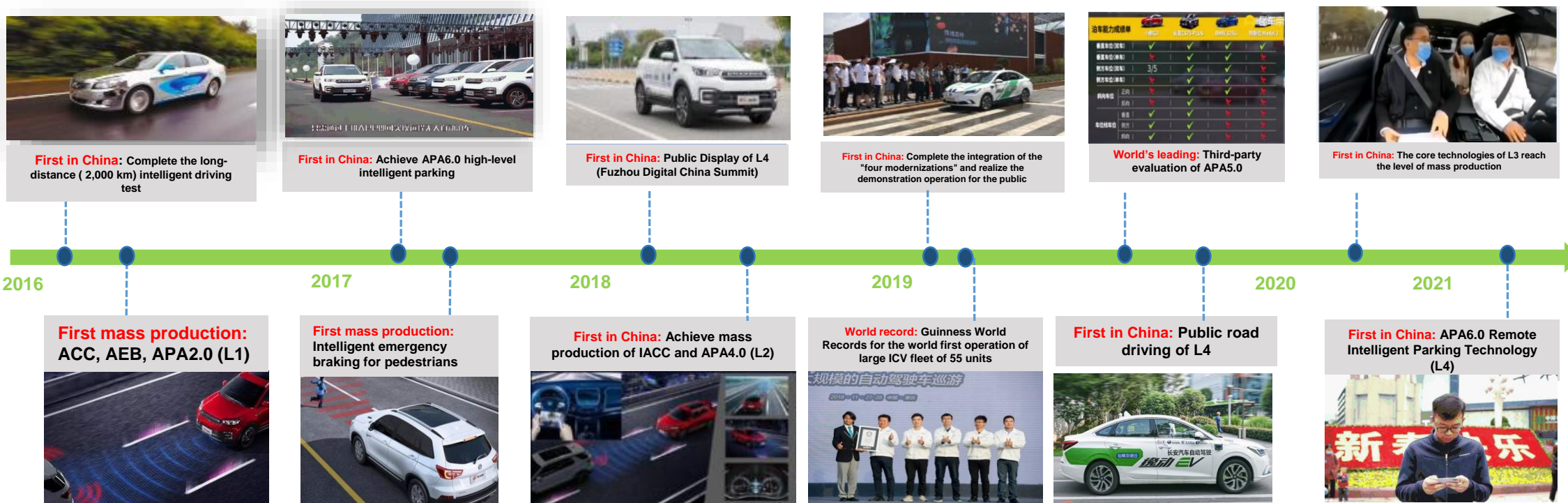
**2. ICVs in China**

**3. Changan solutions for ICVs**













# 3. Changan solutions for ICVs

## 3.1 Intelligent driving

- We have 12 records with intelligent driving and were ranked first in i-VISTA China Intelligent Vehicle Index for the third consecutive years.
- More than 40 technologies including ACC/IACC/AEB/FCW/APA have been mass produced. 14 industry-first technologies among Chinese brands including AEB-P, IACC, APA5.0, APA6.0 were launched. L3 ADAS has been mass produced in March 2021. Changan won the Gold Prize of the World Intelligent Driving Challenge, setting the industry benchmark of intelligent driving in China.



The timeline features a central green arrow pointing right, with blue dots marking key milestones. Each dot is connected to a descriptive box containing an image and text. The milestones are as follows:

- 2016:**
  - First in China:** Complete the long-distance (2,000 km) intelligent driving test. 
  - First mass production:** ACC, AEB, APA2.0 (L1). 
- 2017:**
  - First in China:** Achieve APA6.0 high-level intelligent parking. 
  - First mass production:** Intelligent emergency braking for pedestrians. 
- 2018:**
  - First in China:** Public Display of L4 (Fuzhou Digital China Summit). 
  - First in China:** Achieve mass production of IACC and APA4.0 (L2). 
- 2019:**
  - First in China:** Complete the integration of the "four modernizations" and realize the demonstration operation for the public. 
  - World record:** Guinness World Records for the world first operation of large ICV fleet of 55 units. 
- 2020:**
  - World's leading:** Third-party evaluation of APA5.0. 
  - First in China:** Public road driving of L4. 
- 2021:**
  - First in China:** The core technologies of L3 reach the level of mass production. 
  - First in China:** APA6.0 Remote Intelligent Parking Technology (L4). 

## 3. Changan solutions for ICVs

### 3.2 Intelligent interaction

- ❑ An all-scenario digital cockpit platform for users, developers, and manufacturers
- ❑ Programmable and upgradable services of intelligent cockpit and personalized and diversified intelligent experience for customers
- ❑ Fast and efficient software and hardware interfaces and platform tools for developers

#### Customer



Connected wearables



Multiple interactive screens

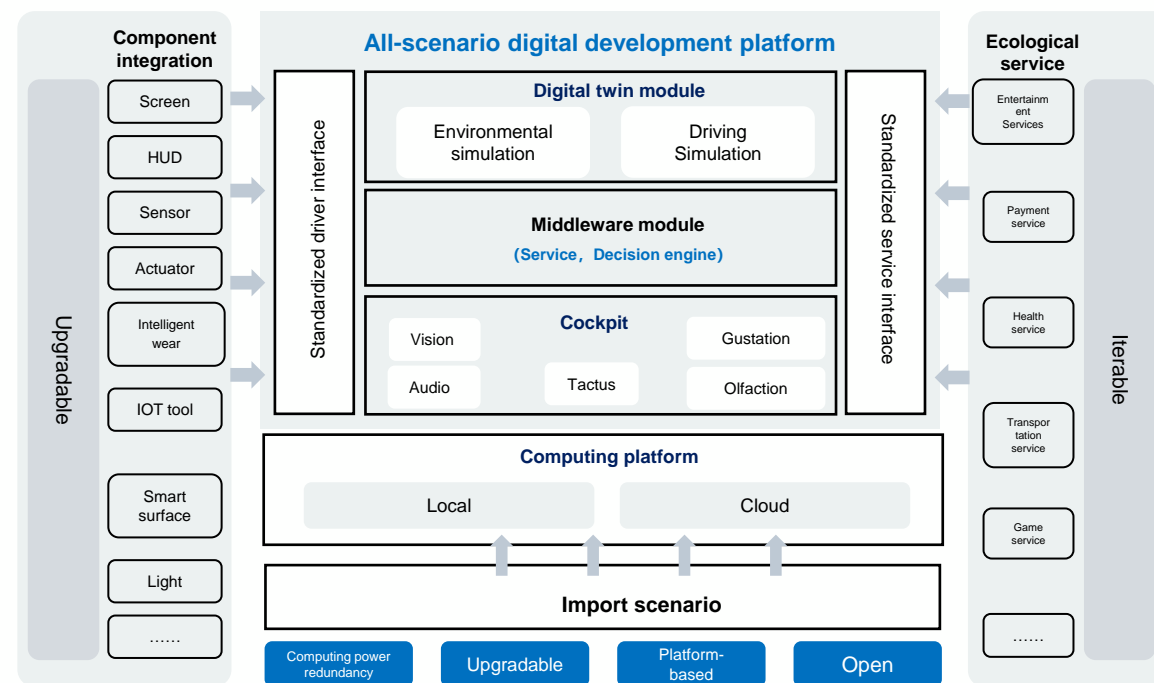


A cinema hall



Seat automatic avoidance

#### Developer



## 3. Changan solutions for ICVs

### 3.3 Intelligent vehicle control

- For diversified and personalized user needs, we develop 3 major intelligent control products of “Flexible ingress and egress”, “Outside-vehicle interaction” and “Scenario programming” to improve customer experience.

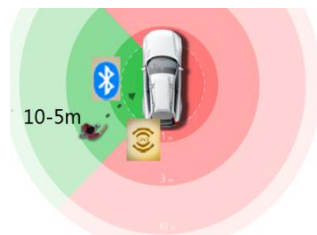
#### Flexible ingress and egress

(UWB+BLE5.0+NFC)

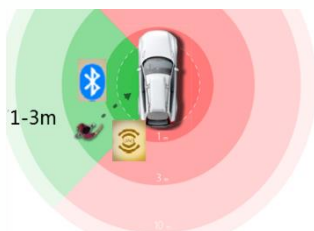
10m-15m: UWB steps in to pinpoint the location



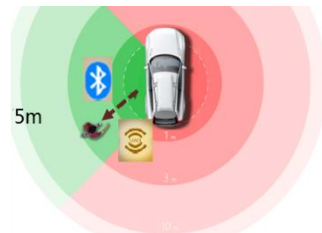
10m-3m: Welcoming lights on



<1m: Auto unlock (same side door), rearview mirror automatically deployed



>5m: Automatically locked



#### Outside-vehicle interaction

(Light + Sound + Screen)



#### Scenario programming

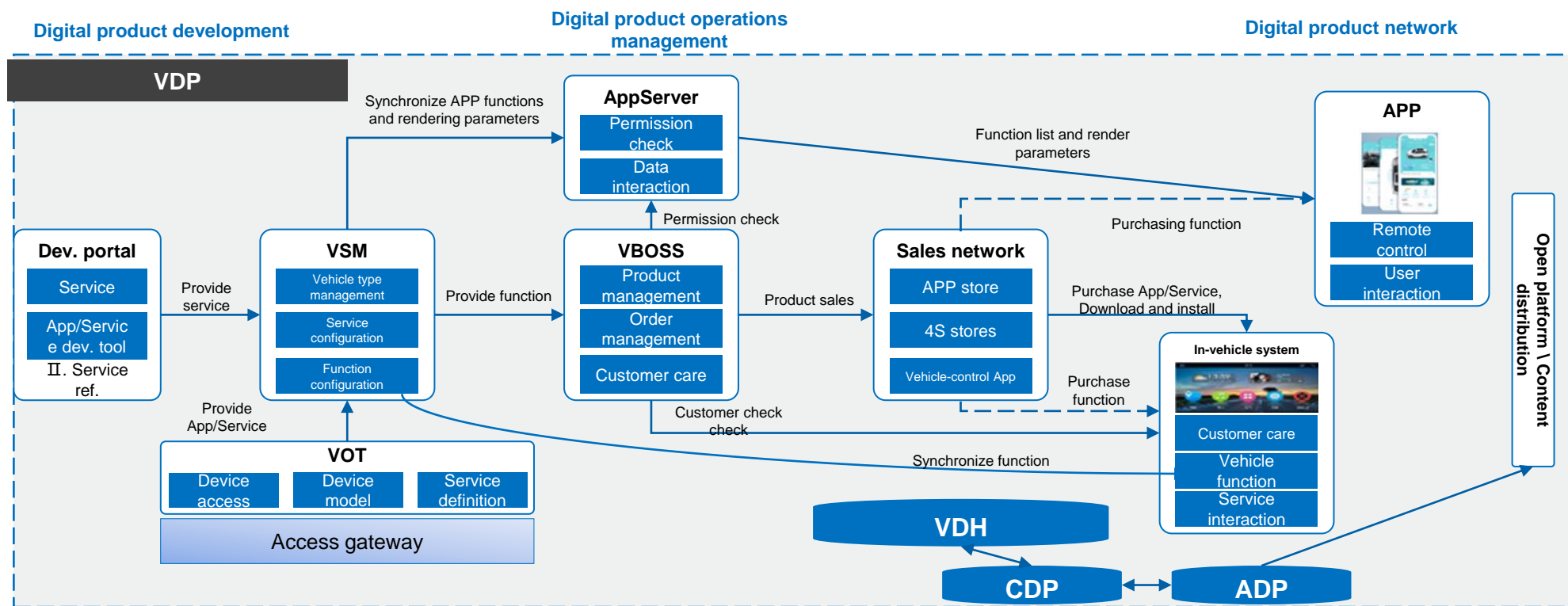
(User + Developer + Platform)



## 3. Changan solutions for ICVs

### 3.4 The big data and cloud platform

- ❑ Changan is the first Chinese manufacturer to own the million-level ICV hybrid cloud platform, with more than **2 million** vehicles connected.
- ❑ The largest big data storage and computing cluster **VDS2.0**: The storage and processing capacity of more than 10PB big data, average daily data processing capacity of **22TB**
- ❑ Digital service platform for intelligent vehicles: **Global data management, control and traceability**

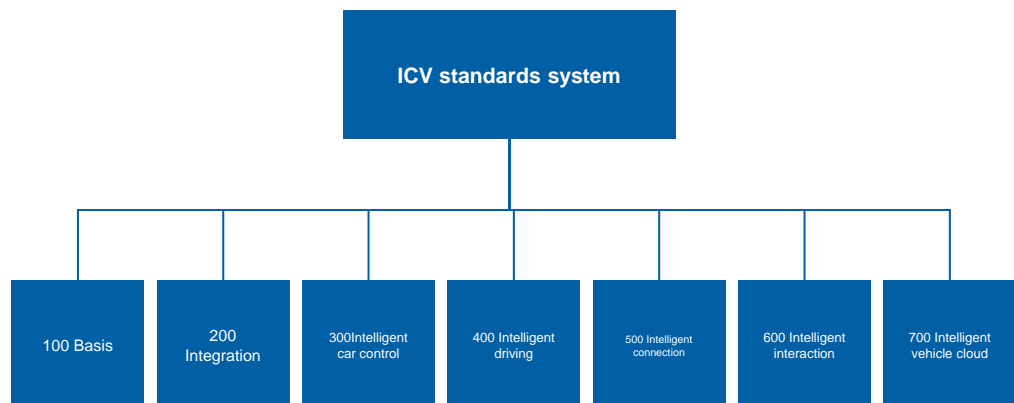




### 3. Changan solutions for ICVs

- ❑ Standards setting for ICVs (Lead 3 and support over 20 standard-setting projects)
- ❑ Partners leverage their expertise, jointly promote standardization work and lay the foundation for the commercialization of autonomous driving

#### Enterprise standards system



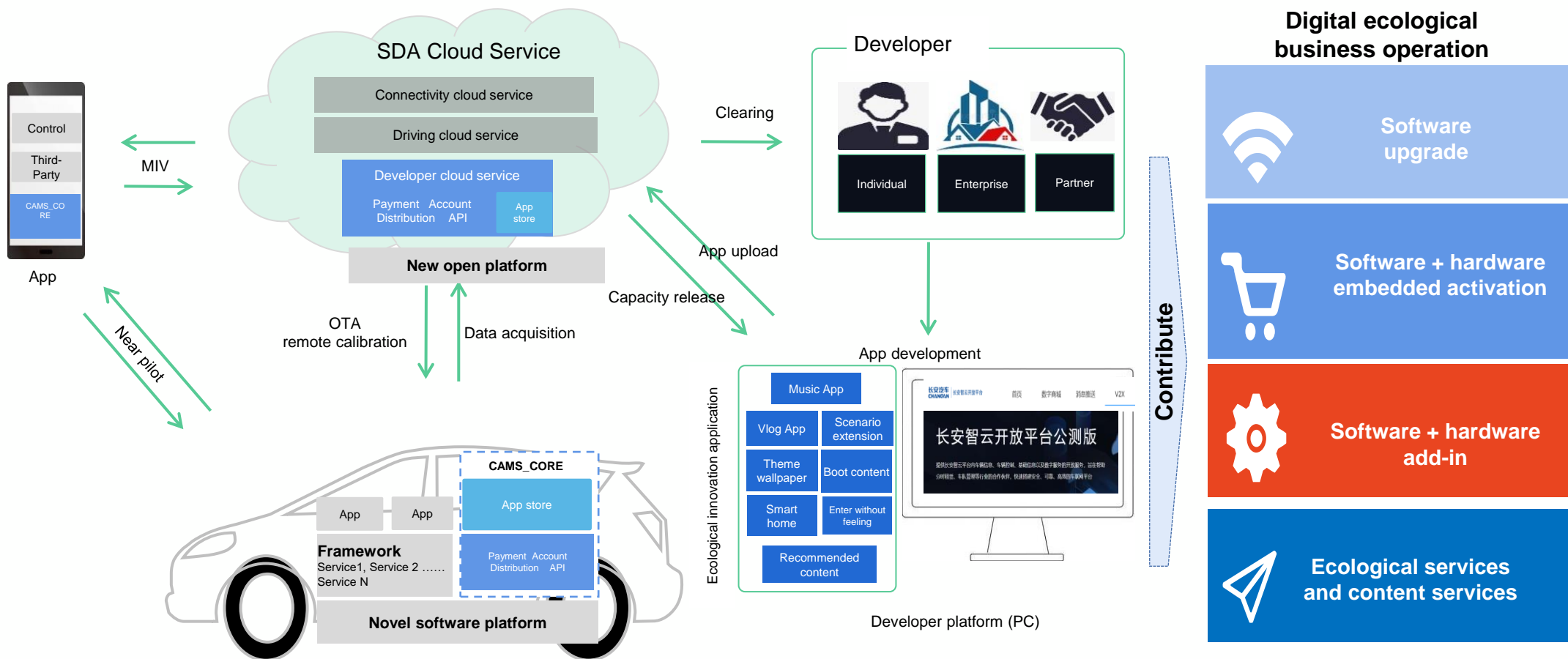
Refined the subcategories based on the national standards system and actual situation of enterprises

#### Standards Development

No.	Standard Name
1	Vehicular multimedia series
2	The Classification of Autonomous Driving
3	Terms and Definitions of Intelligent Connected Vehicles
4	Performance Requirements and Test Methods for Emergency Steering Assistance Systems in Passenger Vehicles
5	Technical Requirements for Vehicle Information Safety
6	General Technical Requirements for Automotive Software Upgrades
7	The Symbols of Control Parts, Indicators and Signal Devices of Intelligent Connected Vehicles
....	.....

### 3. Changan solutions for ICVs

- Changan is building a new digital business ecology featuring openness and sharing for “upgradable software, embedded activation and retrofit of software and hardware, peripheral ecology and content service”, creating bigger values for customers and partners.



**Changan Auto stands ready to join hands with partners to build an innovative ecology for automobiles through openness and cooperation.**

**Thank you!**



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