CATARC | East China Center

CASTC (Shanghai)

China's Automotive Data Industry in the Digital and Intelligent Era: Current State, Trends, Challenges, and Practices

Presented by: Guo Runqing

March 4, 2025

CATARC overview – Key milestones

Dec 1983

The establishment of CATARC is **approved by the State Science and Technology Commission**

May 25 1985

CATARC is **established** in Tianjin

Jul 1999

Due to the **restructuring** of state-owned research institutes, CATARC is put under China Automobile Industry Corporation

Aug 2003

CATARC is **put under the State-owned Assets Supervision and Administration Commission of the State Council (SASAC)**

Mar 2011

CATARC Automotive Proving Ground Co., Ltd. is **established** in Yancheng

Aug 2012

CATARC's **new headquarters** is officially opened in the Dongli District of Tianjin

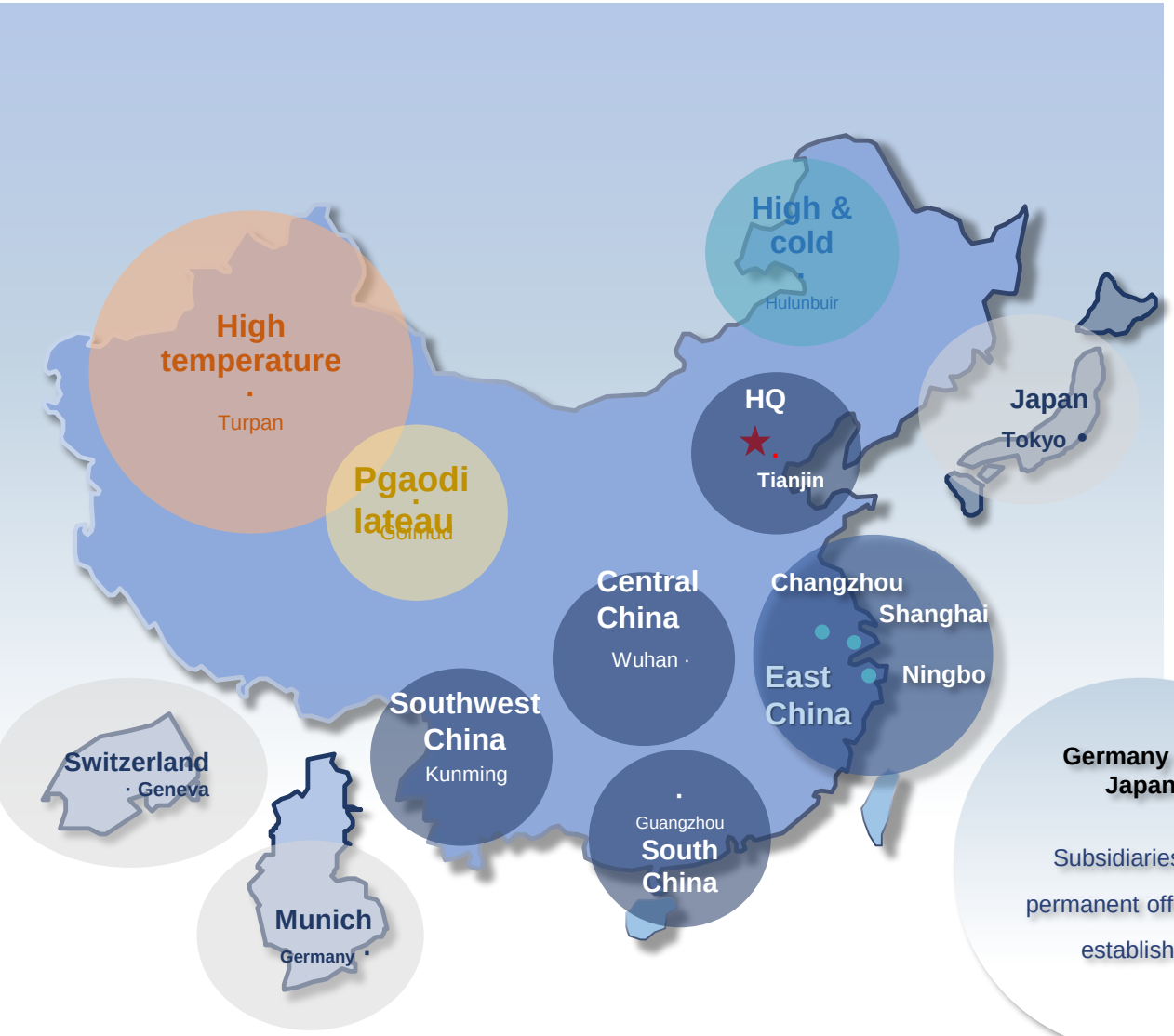
Feb 2018

CATARC is **changed** from an enterprise owned by the whole people to a limited liability company (wholly state-owned enterprise)

Sep 2022

The NEV **Technology Innovation Base** is put into use

CATARC overview – One HQ and four sub-centers



The China Automotive Technology & Research Center (CATARC), founded in 1985, is now headquartered in Tianjin. As a state-owned enterprise under SASAC, CATARC is a comprehensive technology enterprise group with extensive influence in the automotive industry at home and abroad.

The corporate network with four branches in East China, South China, Central China and Southwest China is optimized according to the principle of "one headquarters + four sub-centers".

Internationalization

Germany and Japan

Subsidiaries and permanent offices are established

Switzerland

China Automotive Standards Internationalization Center (CASIC) – China's first foreign specialized agency in the field of standardization

Thailand

A representative office

CATARC has played an important role in helping intergrade China's automotive industry's into the global system

Contents

1.1 Macro environment

- **The next-generation of information technologies, represented by AI and big data, are evolving rapidly around the world, pushing society into the digital and intelligent era with data as the core driving force.**

Global digital economy

Rapid development of global digital economy

The digital economy is expected to reach about US$24 trillion by 2025, accounting for 21% of global GDP and growing at three times the rate of the global economy. Continuous breakthroughs in key technologies such as industrial cognitive intelligence, industrial operating systems, and digital twins have further promoted the in-depth integration of the digital and real economies.

Digital Economy Trends 2025 - DCO

China's digital economy

China's digital economy continues to move forward.

Upgrading of intelligent manufacturing industry: As of September last year, China has added 13 global "lighthouse factories", a total of 72 (accounting for 42% of the world), and a total of 421 national-level intelligent manufacturing demonstration factories.

"5G + industrial Internet":

More than 17,000 projects, covering 41 industrial categories, improved enterprise productivity by 30% to 50%.

Digital and intelligent transformation of the automotive industry

The automotive industry is in a critical stage of digital and intelligent transformation.

Digital and intelligent transformation of automakers

Smart factories, digital marketing, flexible supply chain, and digital operation

Automakers are going beyond manufacturing to manufacturing and service. They also use AI-enabled quality inspection and supply chain collaboration to reduce manual inspection costs by more than 50% and improve product yield.

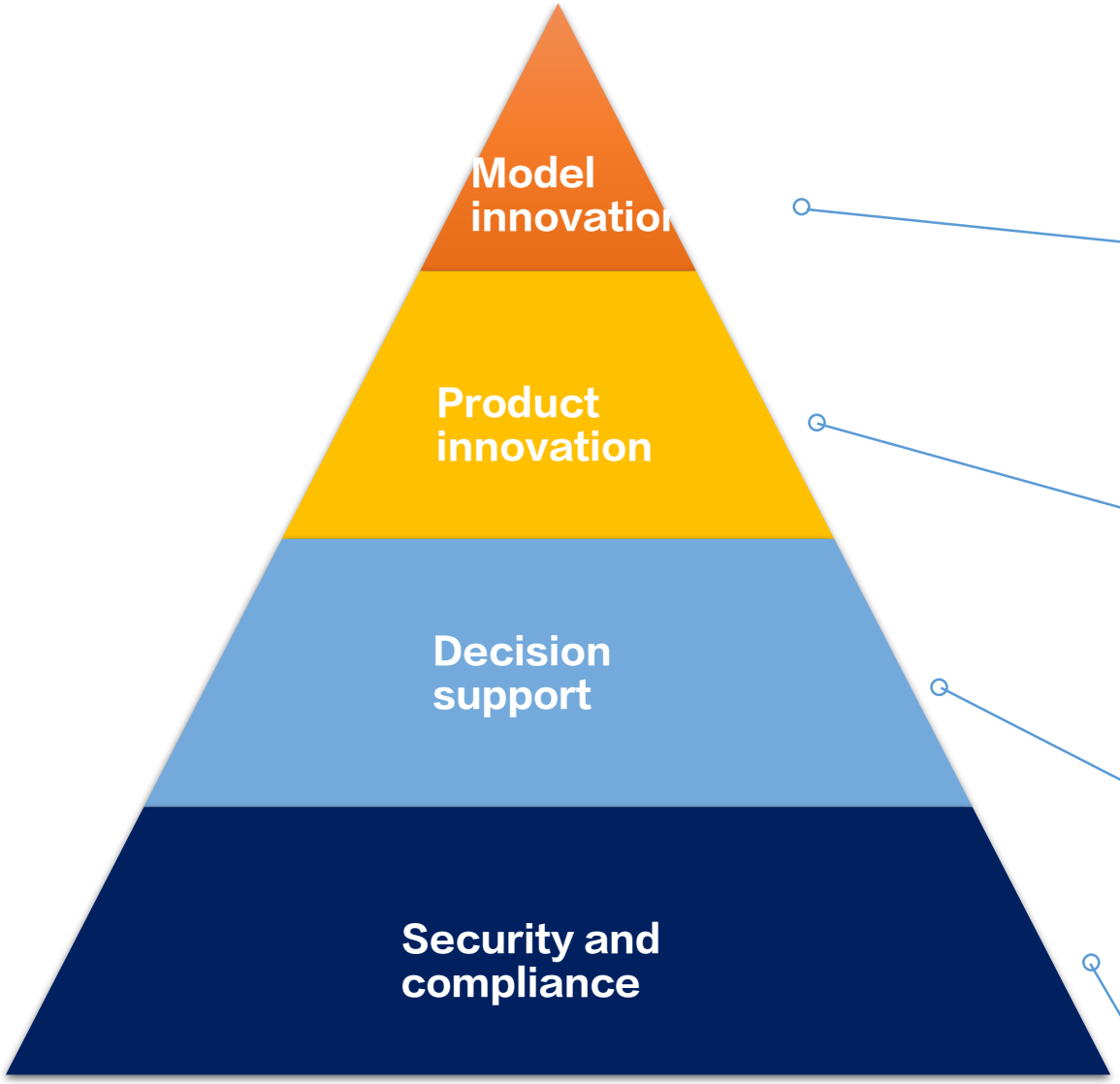
Intelligent vehicles

With intelligent driving, intelligent cockpits, intelligent network connectivity, vehicles are moving from "electric" to "intelligent".

Data assetization

China In-Depth Accident Study (CIDAS) database launched by CATARC supports the integration of data assets into tables.

1.2 Application and development paradigm for the automotive data industry



Subscription-based services and dynamic pricing policies

Haier acquired Autohome Inc. and extended its service scope to cover value-added services such as battery maintenance and over-the-air (OTA) upgrade. It uses user behavior data to optimize marketing strategies and form a closed-loop ecosystem that covers content, transaction, and service.

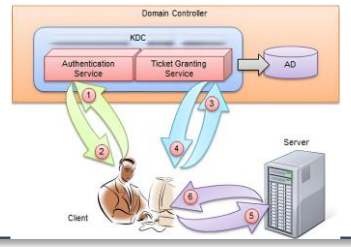
Personalized recommendations and intelligent hardware iteration

Active interactive optimization and personalized adaptation of intelligent cockpits

IDEAL's trains end-to-end models with massive amounts of real road data to achieve no takeover over 100-km driving.

Real-time data analysis and end-to-end autonomous driving model

Weilai's battery health management system and charge and discharge data combined with attenuation models can dynamically adjust charging policies, prolonging battery life by more than 20%.



Data encryption and anonymization, and access control permission levels

Compliance management (e.g., China's Data Security Law and GDPR)

Privacy protection

Contents

2.1 Data industry development and security

Legal and regulatory requirements

- *Cybersecurity Law of the People's Republic of China*
- *Data Security Law of the People's Republic of China*
- *Personal Information Protection Law of the People's Republic of China*
- *Provisions on Promoting and Regulating Cross-Border Data Flows*

Protecting personal privacy

Data compliance ensures that personal information is effectively protected, prevents data from leakage, abuse, or unauthorized access, and protects user privacy.

Reducing legal risks

Adhering to data compliance requirements helps enterprises avoid legal proceedings, fines, and reputation damage caused by violations.

Promoting international services

Adhering to cross-border data compliance requirements helps enterprises smoothly conduct international business and avoid market access obstacles caused by data compliance issues.

Core challenges for the data industry development:

Data security and privacy protection

2.2 Data industry development and security

Key principles and consensus

01 Local O&M and data storage

Core data that affects national security must not flow across borders, must be stored locally, and must be classified and graded, with clear responsibility for the main body.

03 Respecting data subjects' rights

Data subjects are granted the right of access, right to rectification, right to erasure (right to be forgotten), and right to data portability, allowing them to restrict or object to data processing under specific circumstances

05 Data security assurance measures

Implement technical and organizational measures to protect data.
Report and notify relevant parties of data breaches in a timely manner.

02 Data collection and processing compliance

Specify the purposes of data collection and only collect data necessary for the intended purposes.

Ensure that data is processed in a lawful, fair, and transparent manner.

Ensure consent is freely given, informed, and specific indication of the data subject.

04 Data minimization and storage restrictions

Retain only the minimum amount of data necessary for the purposes of processing.

Ensure personal data is stored for no longer than is necessary for the purposes for which the personal data is processed.

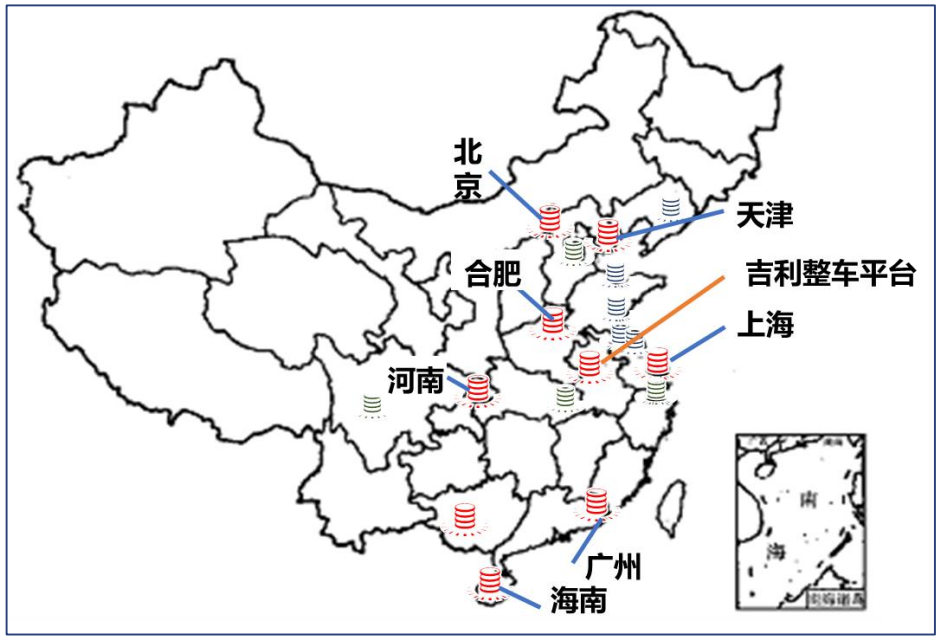
06 Data protection impact assessment (DPIAs)

Assess data processing that is likely to result in high risks.

2.3 Case study 1: Intelligent Connected New Energy Vehicle Data Industry Alliance

- **The Intelligent Connected New Energy Vehicle Data Industry Alliance has access to data resources of a wide range of intelligent connected vehicles and new energy vehicles (NEVs) in typical cities.**

"1 goal, 2 cores, and 3 assurances"

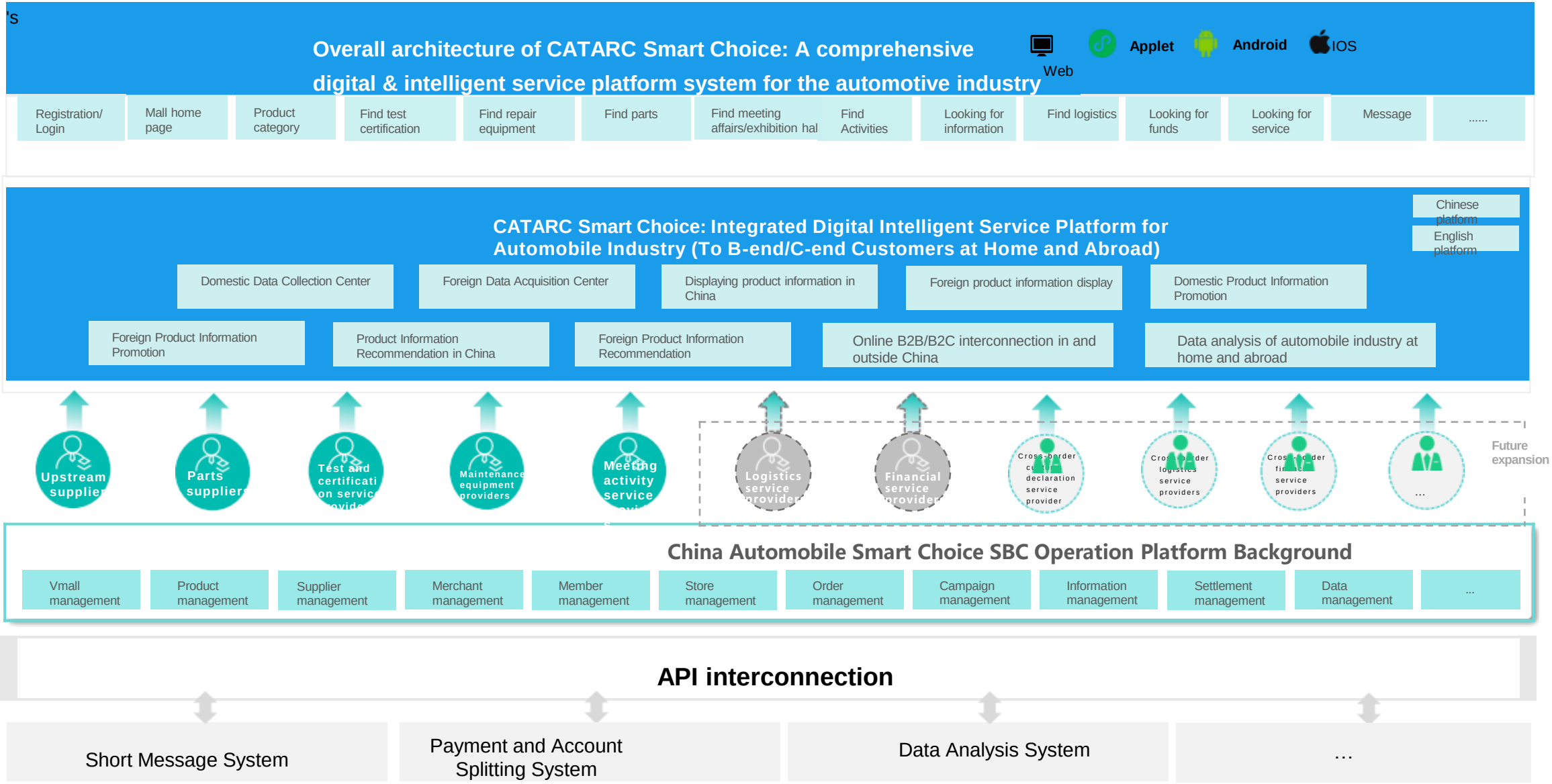


7 local data platforms + 1 automaker data platform

1. Build secure, compliant, and well-organized IoV data service capabilities.
2. Scenario-based data and compliant applications
3. Align with data suppliers' capabilities, reuse scenario-based development achievements, and build a trusted space platform.

By the end of 2024, the alliance has real-time access to the data of more than 5 million NEVs, covering fields like commuting, online ride hailing, leasing, logistics, and public transportation. This allows the alliance to develop data application capabilities for these data platforms and provide scenario-based solutions for the users.

2.3 Case study 2: Intelligent Networked New Energy Vehicle Data Industry Alliance



2.3 Case study 3: China's first innovation center for cross-border data transfers in the automotive industry

On July 18, 2024, An Tiecheng, Chairman of CATARC, and Chen Jinshan, Director of Lingang Special Area Management Committee, and Member of the Standing Committee of Shanghai Municipal Committee, unveiled the center.

- CATARC and Lingang Special Area Management Committee reached a strategic cooperation agreement.
- China's first innovation center for cross-border data transfers in the automotive industry unveiled in Lingang Special Area.

2.4 General list for cross-border data transfers for intelligent connected vehicles in Shanghai

- **In May 2024, the first general list for cross-border data transfers in the automotive domain in China, led by CATARC (Shanghai), was released in Lingang, Shanghai.** It includes 158 fields across four scenarios: **cross-border production and manufacturing, global R&D and testing, after-sales services, and international trade of used vehicles.**

- **Scenario 1:** Cross-border production and manufacturing

生产制造管理
库存信息
物流供应链
……

- **Scenario 2:** Global R&D and testing

研发设计数据
测试数据
研发管理数据
……

- **Scenario 3:** After-sales services

售后服务记录
故障状态数据
售后订单
……

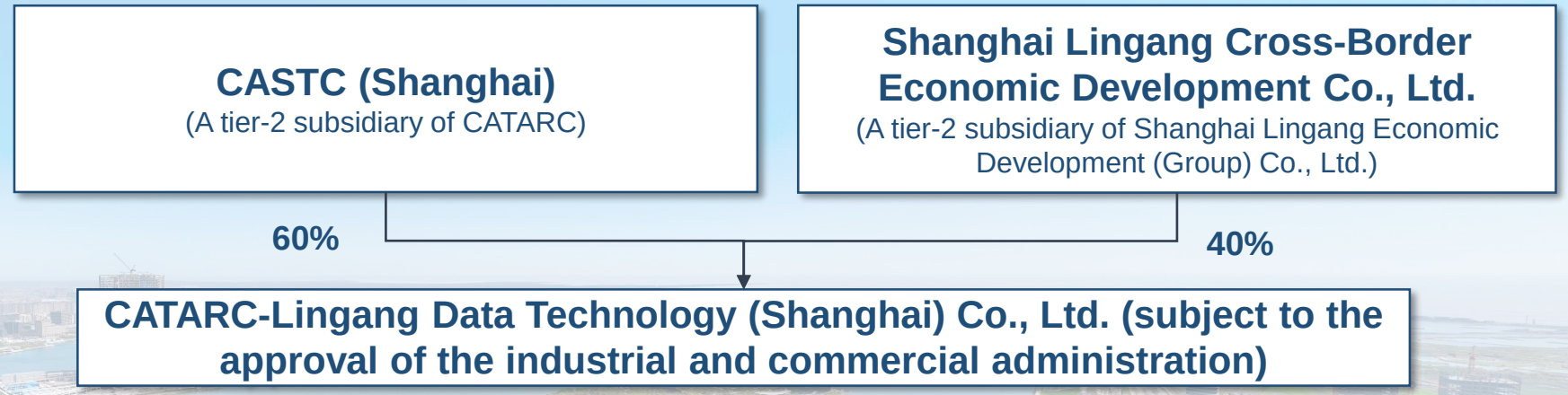
- **Scenario 4:** International trade of used vehicles

车辆信息
维修信息
保险信息
……

2.4 A cross-border data transfer company jointly established by CATARC and Shanghai Lingang Economic Development (Group) Co., Ltd.

Investment structure

(Registered capital: CNY20 mn)



Positioning

- Build a solid presence in Lingang and serve the world
- Build a world-class innovative service organization that enables automotive data elements and cultivates new forms of business for the automotive industry

Vision

- Innovator of automotive data element enablement in Lingang, Shanghai
- Leader in the cultivation of new forms of business for the automotive industry in China

2.5 Trusted data spaces for cross-border transfers

- As a key, comprehensive technical service institution in the Chinese automotive industry, CATARC should ensure that a **unified and authoritative** trusted data space for cross-border transfers in the automotive industry is established. It includes a set of cross-border data standards and a set of data compliance frameworks, which will be piloted in scenarios such as autonomous driving R&D data and battery passport data.

1 Build a technology-driven standards system for cross-border data transfers

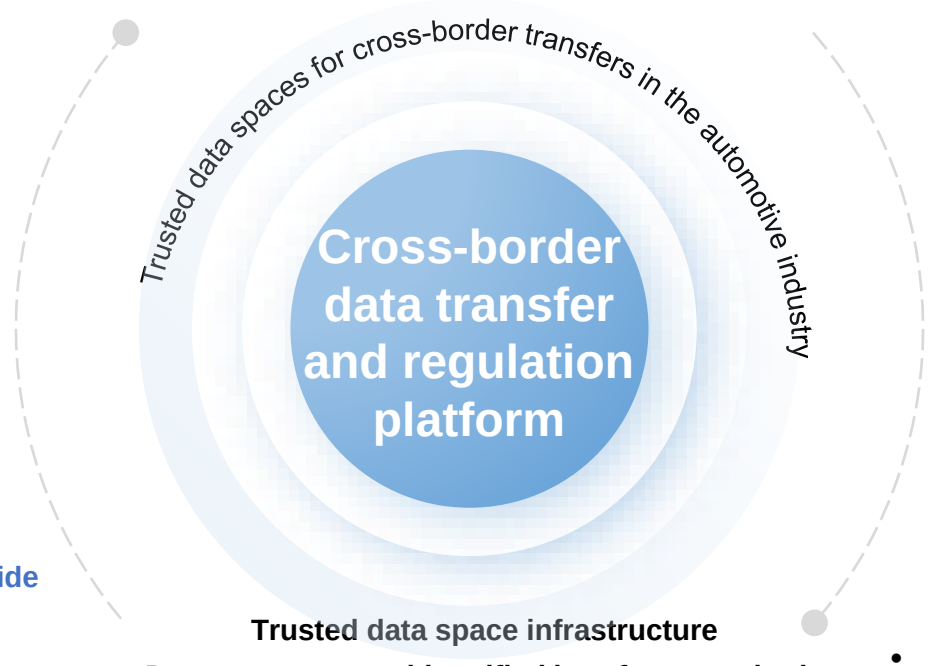
- Cross-border data transfer standards
- Core technology R&D and application

2 Build a compliance and mutual trust mechanism

- Compliance framework design
- Trustworthiness certification and cooperation based on mutual trust

3 Promote scenario-based applications and ecosystem-wide collaboration across borders

- Scenario-based data sharing
- Ecosystem co-development and value sharing



4 Reinforce data sovereignty and security

- Data sovereignty management
- Full-link protection

5 Facilitate national strategy implementation and global competitiveness improvement

- Participate in the development of international rules
- Support the Belt and Road Initiative and dual circulation strategy

6 Build a cross-border data transfer service platform and a long-term operation mechanism

- One-stop data transfer service platform
- International cooperation lab and talent development
- Dynamic monitoring and continuous optimization mechanism

2.5 Applications of trusted data spaces for cross-border transfers

■ **A trusted data space for cross-border transfers will support applications of upstream and downstream enterprises in the automotive industry.**

Product lifecycle carbon emissions management

- Full-lifecycle carbon footprint monitoring
- Cross-border disclosure and audit of carbon emissions data

Cross-border sharing and compliance of intelligent driving data

- High-precision map and road test data sharing
- Cross-country collaborative R&D and verification

Global supply chain collaboration and flexible management

- Cross-border supply chain due diligence and resilience improvement
- Supply-demand matching and dynamic scheduling

Cross-border product tracing and digital passport

- Battery passport and circular economy
- Parts traceability and quality supervision

Cross-border after-sales services and user data compliance

- Cross-boarder user behavior data analysis
- Cross-border OTA upgrades and remote diagnoses

International standard and rule harmonization

- Participating in the development of international rules
- Cross-border data sandbox and compliance test

Contents

3 Industry development recommendations

Build up the Intelligent Connected New Energy Vehicle Data Industry Alliance

Consolidate resources across the entire value chain: Cooperate with automakers, chip vendors, software developers, and international partners to build an end-to-end data sharing platform, covering R&D, production, and services, promote cross-country data interconnection pilot projects, and drive joint breakthroughs in core technologies.

Build trusted data spaces for cross-border transfers

Build a secure and controllable foundation for data circulation: Use blockchain and privacy computing technologies to support data traceability and anti-tampering, and use the hierarchical and category-based governance mechanism to support sandbox pilot verification in the free trade zone to verify compliance compatibility between multiple countries.

Build a tech-driven standards system for cross-border data transfers

Develop an internationally compatible standards solution: Take the lead in developing data interface specifications and integrating them into the international standard framework, use open-source tools to lower the technical threshold, and promote the dynamic evaluation and certification mechanism to improve circulation efficiency and security.

Design a compliance framework and build a mutual trust and cooperation mechanism

Build global compliance service capabilities: Develop automatic compliance check tools that adapt to different laws and regulations in multiple countries, promote cross-border mutual recognition agreements and dispute resolution mechanisms, and ensure data sovereignty and stability of cross-border cooperation.

Building on technology, compliance, and cooperation, we need to work together to make China's intelligent connected vehicle data more competitive in the global market, and provide scalable ecosystem solutions to support the digital transformation of the global automotive industry.

CATARC | East China Center

CASTC (Shanghai)