The Development and Outlook of Intelligent Transportation System in China

May 2026

Background: new stage and new vision

Integration, security, digital intelligence, and green innovation drive high-quality development of ITS in China

By the end of 2024, the total mileage of China's comprehensive transportation network has exceeded **6 million kilometers**.

- Deep integration of **new generation information technology** and traditional transportation.
- China is building **a world-class** intelligent transportation **industry**.
- China is entering a new stage of scale and industrialization driven by **technology, market and investment.**

Source: Outline on National Comprehensive Transport Network Plan

CONTENTS

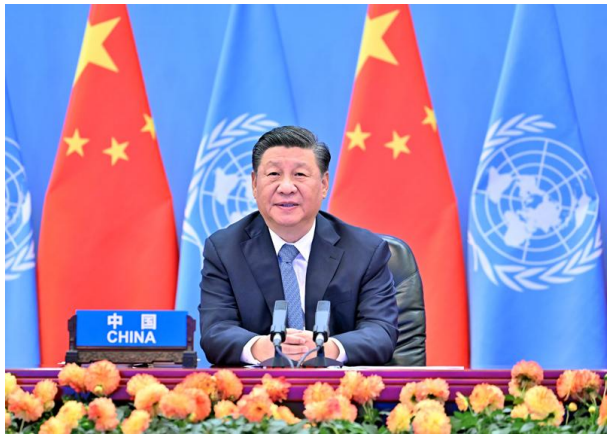
01 National Planning & Policies of ITS in China

1.1 National Planning and Policies

Since 2019, government issued two programmatic policies

Outline for Building China's Strength in Transport

Outline on National Comprehensive Transport Network Plan



2nd UN Global Sustainable Transport Conference

Ecological priority and realizing green and low-carbon transportation

Establishing a green and low-carbon economic system is the long-term strategy to achieve sustainable development. We should accelerate the formation of green and low-carbon transportation modes, promote new energy, intelligent, digital transportation equipment and make transportation more environmentally friendly.

Indicate the future development direction of transportation in China

1.2 National Policies for ITS

The 15th Five-Year Plan and Long-Range Objectives Through the Year 2035

Improve the modern integrated transportation system by enhancing cross-regional coordinated planning and seamless connectivity across modes of transport, while strengthening coverage and accessibility guarantees in underdeveloped areas. Establish a diversified and resilient international transportation

Opinions on the in-depth implementation of "AI +" action

In sectors such as software, information technology, finance, commerce, law, transportation, logistics, and trade, promote the widespread application of next-generation intelligent terminals and intelligent agents.

Implementation Opinions on "AI + Transportation"

AI become an important driving force to lead the innovation and development of transportation.

02

Achievements of ITS in China

2.1 Overall

ETC

Over 320 million users

48211 ETC lanes were completed

Provincial border toll stations abolished

More than 400 Urban TOCC nationwide

Over 1000 billion smartphone navigation service per day

Over 80% online ticketing for railroad transportation

Over 85% online ticketing for airline

Online Taxi/Ridesharing:

400 cities

539 million total users

Peak daily orders (>33 million)

Online Shopping:

Over 15500 billion / year average annual consumption

180 billion intelligent logistics express delivery

The total number of users of the BeiDou has exceeded 2 billion.

Over 4000 Robotaxi Operating regularly in more than 10 cities

The total number of issue of "Traffic Union Card" is 562 million

170,000 km of full-covered intelligent freeway

400,000 km of monitoring covered highway

50% of commercial vehicles were intellectualized

Bicycle Sharing:

Serving over 300 cities

300 million of total users

Over 20 million bikes were deployed

2.2 Digital Infrastructure for Highways

☐ Core features of road digitalization:

- Data is the primary productive resource.
- Digital transformation of the whole process of highway construction, management, maintenance, operation and service.
- Promote innovation and development of the highway business.

Figur:1： *Digital transformation process of highways*

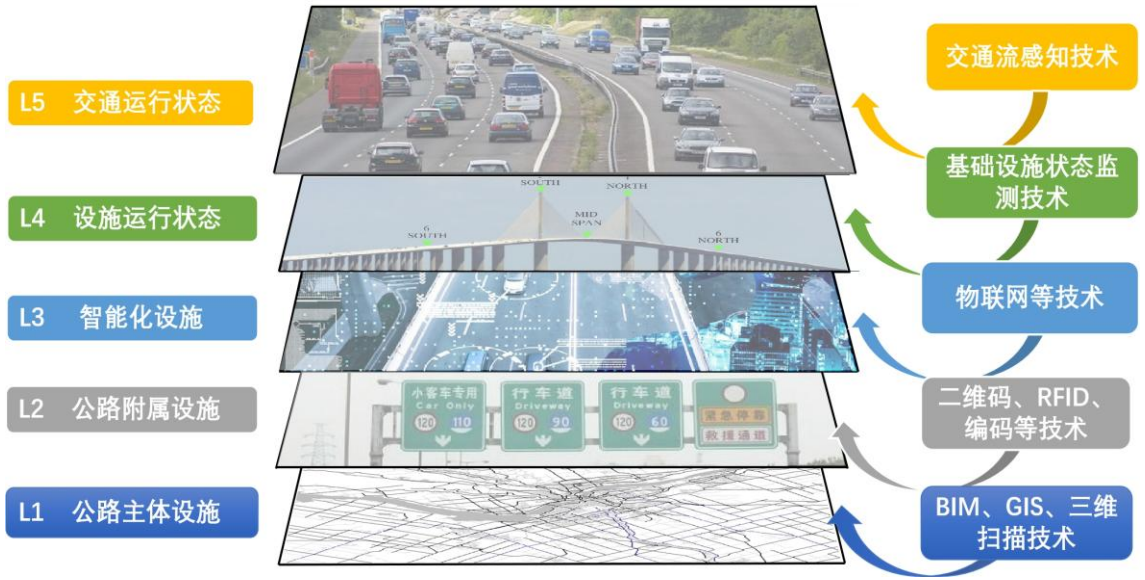
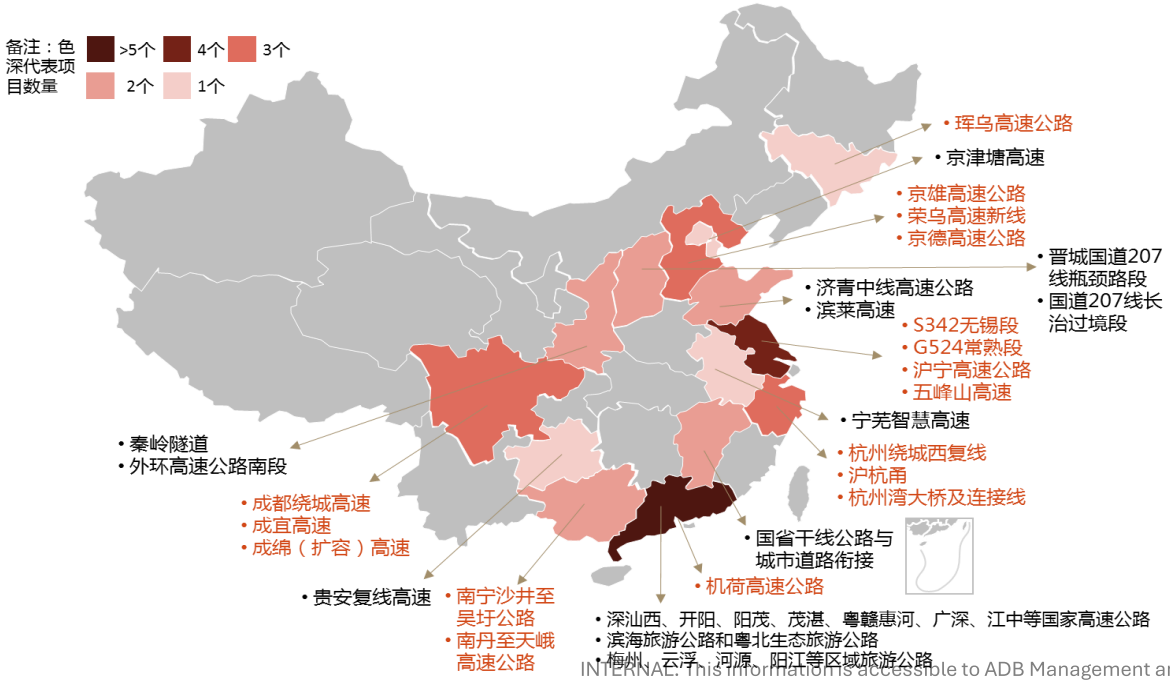
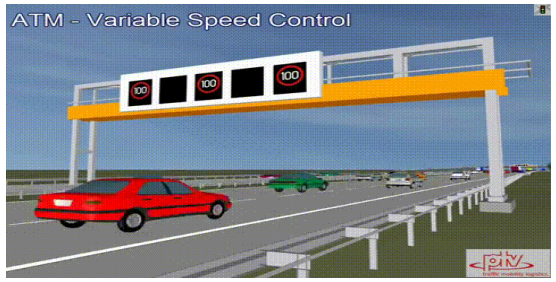


Figure2： Physical and digital highways

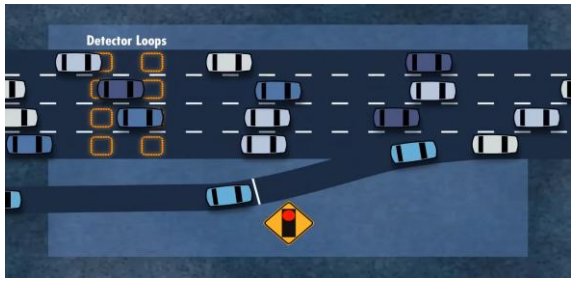
2.3 Intelligent highway pilot projects in China

- There are **29** provinces and municipalities in China that have built intelligent highways.
- There are **95** intelligent highways that have been built or are being built, and **55** projects are planned.
- The average investment is **4.8** million CNY/km.
- **85%** are expressway
- Perception system, digital management, travel services

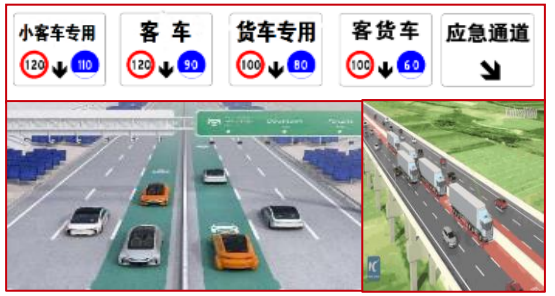




Dynamic speed limiting control



Dynamic ramp control



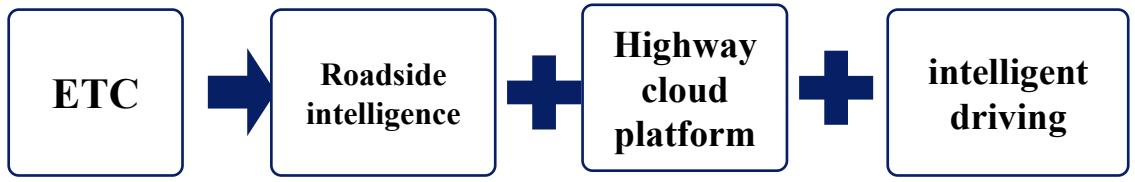
Dedicated lane dynamic adjustment

Open the emergency lane

2.4 ETC in China

ITS improves travel services and achieves sustainable development

- As of the end of **2024**, there are **29,500** sets of **ETC gate**, **320 million ETC users** and **68,000 ETC lanes** with more than 250,000 RSU and other external field equipment on highways.
- ETC has a positive impact on reducing road congestion, promoting energy conservation, and improving service.
- Over 10 “cardless” payment pilot demonstrations have been carried out



2.5 Autonomous driving

Policies

- Notice on Carrying Out Pilot Work for the Access and Road Use of **Intelligent Connected Vehicles** （2023）.
- Implementation Opinions on "**AI + Transportation**" by MOT （2025）.

High-level Autonomous Driving

- **Closed environment**
  - Mining area in Inner Mongolia
  - Shanghai Yangshan Port, Tianjin Port
- **Open road environment**
  - Robotaxi in Beijing,Shanghai,Guangzhou…

Park

Retail

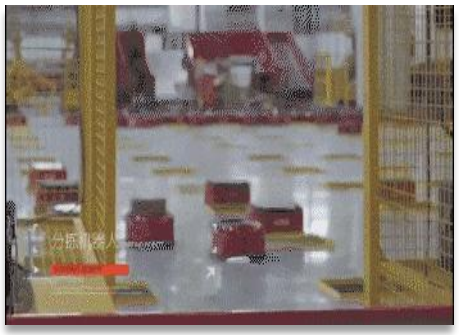
Port

Robotaxi

2.6 Intelligent Logistics

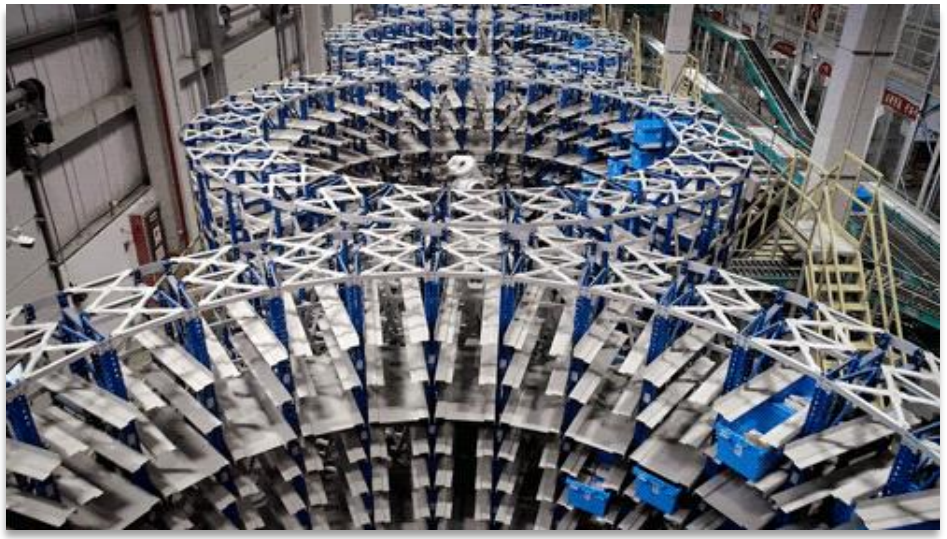
China Express Logistics Industry

- Chinese express delivery companies handle an average of 500 million services per day, ranking first in the world for 11 consecutive years.
- High reliability during the pandemic period.



Internet + Logistics

- Freight sharing platform
  - Intelligent and precise matching
- Reduce costs and improve efficiency



2.7 The application of transportation big data & AI agent in China

The Spring Festival travel rush is supported by big data systems

- **The Spring Festival travel rush：**
  - The busiest national passenger migration, from 15 days before the Spring Festival to 25 days after the Spring Festival.
  - The total number of passenger trips in the **2025 spring Festival travel rush** is about **9 billion**.
  - Big data mining is used for **passenger flow analysis, decision support and transport capacity scheduling**.

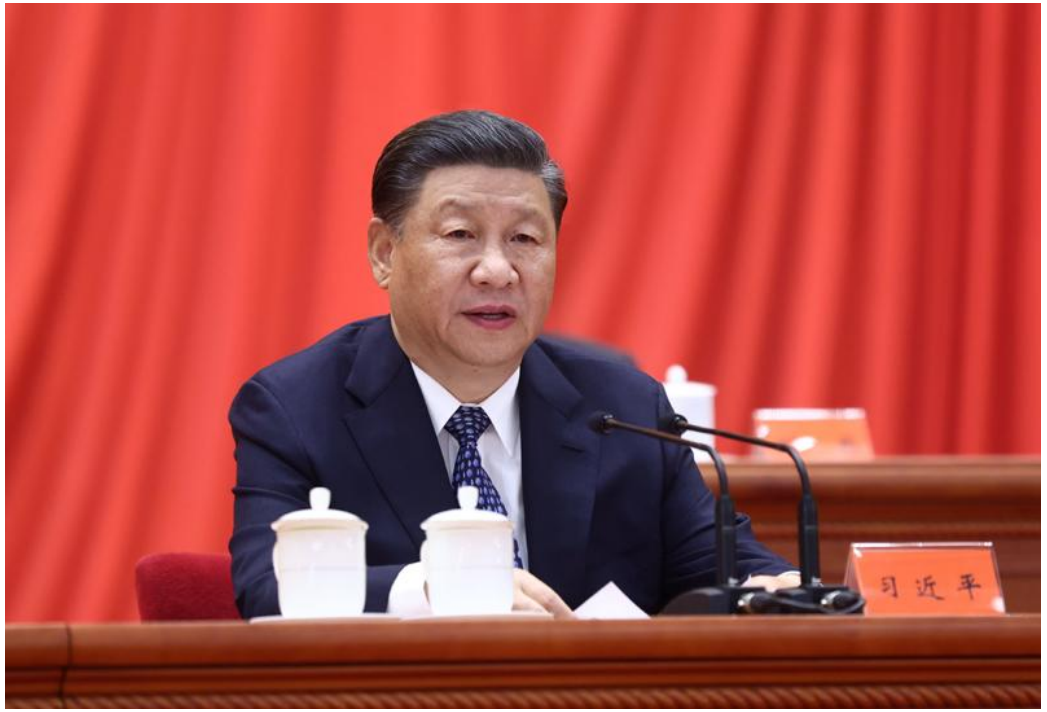
Agents power the National Transportation Information Platform

- **One system, one agent：**
  - Agent for Road Network Management and Control.
  - Dynamic Monitoring of "Two Types of Passenger Vehicles and One Type of Dangerous Goods Vehicles".
  - 12328 Transportation Service Hotline Intelligent Agent.

03 The Future of ITS in China

3.1 Future development direction of ITS in China

New era of AI



Emphasized by President Xi at the 20th collective study of the Political Bureau of the CPC Central Committee

Adhere to self-reliance and self-reliance, highlight the application orientation, and promote the healthy and orderly development of China's artificial intelligence in the direction of beneficial, safe and fair.

Transportation is a key sector where AI technology has been pioneered in implementation, scaled application, and comprehensive integration.

3.2 New features of the development of ITS

- **Artificial intelligence** is more effectively driving high-quality development and enhanced safety in the transportation sector.
- Accelerate the establishment of a **comprehensive transportation big model** system.
- Adopt the "**technology + engineering**"model to advance the implementation of typical application scenarios.

The Development of Intelligent Transportation Services

The Requirements of Sustainable Development：

■Focus on build an intelligent, integrated, and three-dimensional transportation network.

■Focus on promote innovative applications of autonomous driving.

■Focus on leverage artificial intelligence to enhance transportation services.

Priority 1： Digital and Intelligent Infrastructure

Focus Areas

Intelligent Roadway

Intelligent Railway

Intelligent Shipping

…

Working Principles： Four Orientations

Problem-oriented → Demand-oriented → Goal-oriented → Results-oriented

What problem to solve?
- Improving organization
- Improving safety and convenience

what is the rigid demand?
- Physical space movement of people and objects
- From the perspective of users

What are the engineering goals?
- Clear goals
- Such as quality engineering

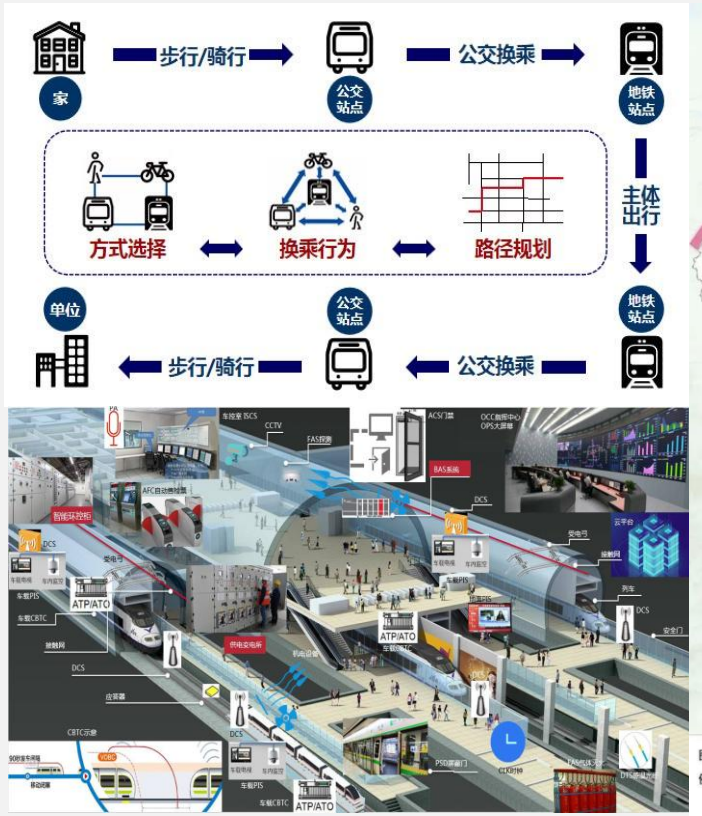
What effects and access are achieved?
- For operators
- For users

Priority 2： Metro Smart Integrated Mobility

- Focusing on key regions, advance the construction of **intelligent integrated three-dimensional transportation networks** in metropolitan areas.

Transportation “Digital Brain”

Multi-modal transportation network



Priority 3： AI Applications in Transportation

Comprehensive Application of “AI+Transportation”

Highway

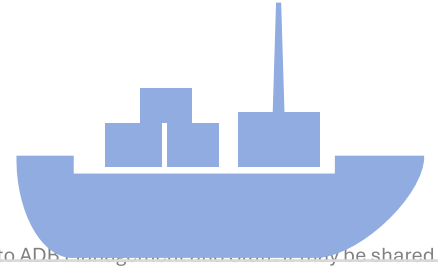
- Intelligent Control and Disposal of Disasters
- Major Corridor Truck Automation
- Free-flow Tolling
- Combined Driver Assistance

Railway

- High-speed Maglev Autonomous Operation
- Embodied Intelligent Trains
- Railway Station Intelligent Passenger Services

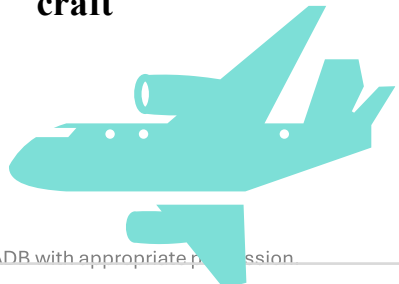
Waterway

- Autonomous Formation Navigation of Vessels
- Port Full-process Automated Handling
- Port Intelligent Dispatching



Aviation

- Low-altitude Smart Delivery Services
- UAV Patrol and Law Enforcement
- Airport Smart Passenger Services
- Autonomous Flying Aircraft

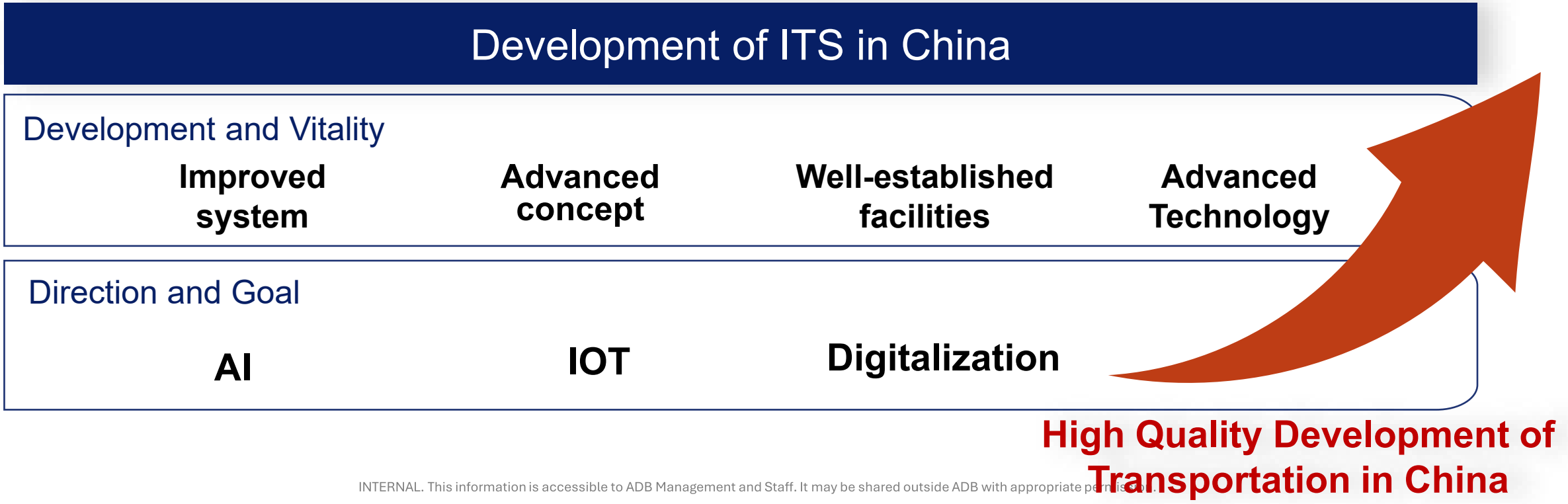


Post

- Intelligent Warehousing
- Intelligent Last-mile Delivery
- Intelligent Express Delivery Route Optimization
- Express Delivery UGVs & UAVs

3.3 Future ITS in China

The development of ITS in China relies on AI. AI technology facilitates the integrated development of transportation systems, enhances safety standards, drives digital and intelligent upgrades, and promotes green transformation.



Thanks