



ITS in China: Updates & Future

Research Institute of Highway Ministry of Transport, China

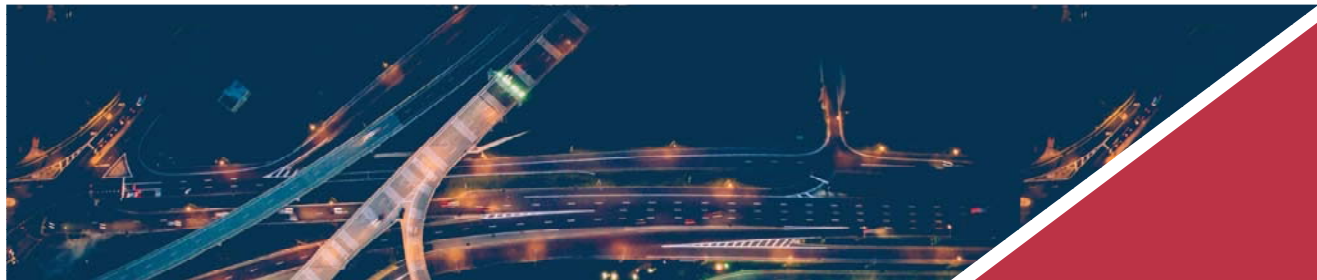
HOU Dezao



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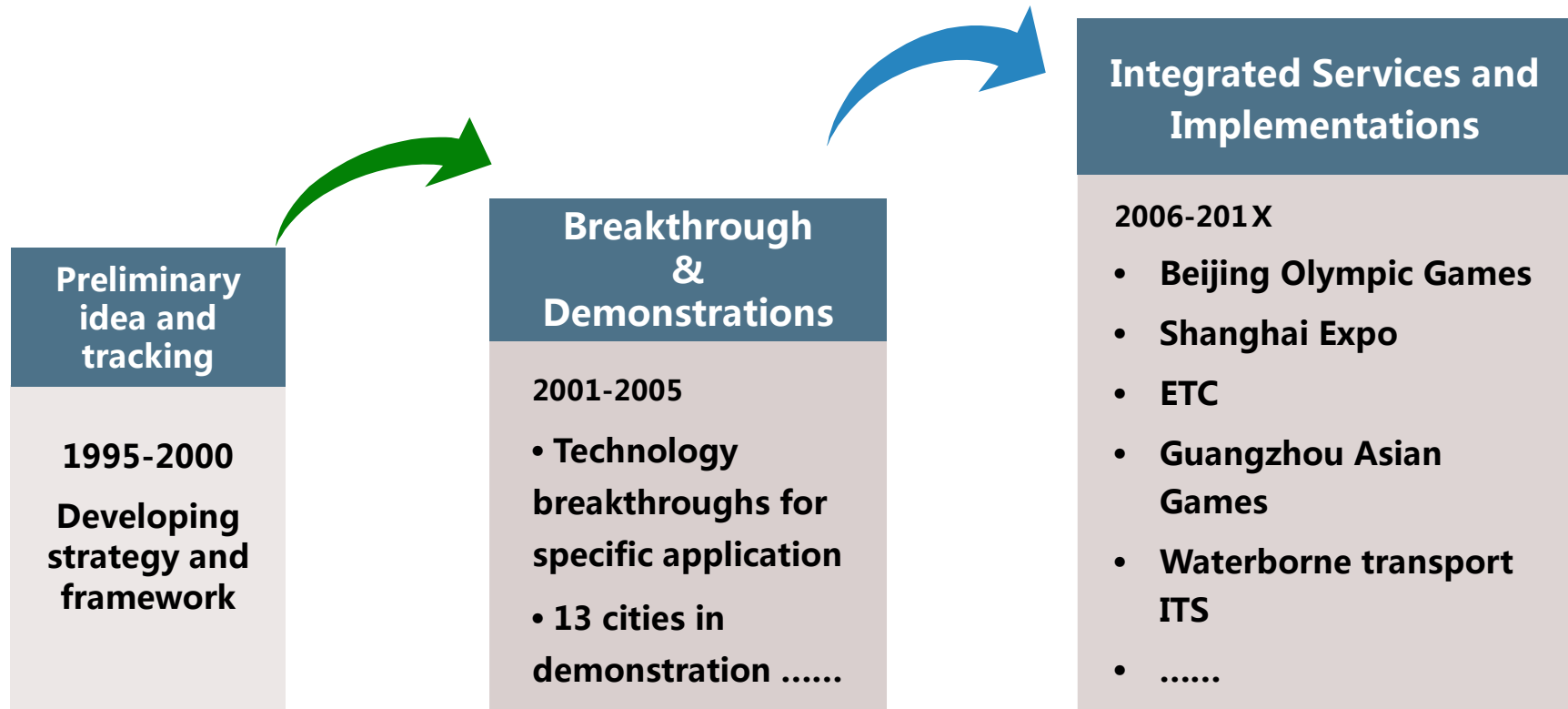
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/01 Development Updates of ITS in China



Development History

Socio-economic growth and Motorization process



Remarkable Development of ITS in China

□ Highway Infrastructure Construction

- The total mileage of highways in China is **4.7735 million kilometers**

□ Informatization and Intelligence of Highway Construction

- The traffic parameter monitoring facilities of highways reaches **20,000 sets**
- The total scale of video monitoring facilities of highways reaches **48,000 sets.**
- ETC Lane reaches **17295**

□ High-speed Railway Establishes New Face

- National mileage reached **19,000 kilometers**
- The maximum operating speed can reach **350 km/h.**
- The annual passenger volume of Railways in China is **2.535 billion**



Remarkable Development of ITS in China

□ The Vehicle ownership increased continually

- 279 million motor vehicles and 124 million private vehicles in China.
- 14.7312 million commercial vehicles and 13.925 million taxis

□ Mobility With More Convenience

- Metro card volume is 430 million, 37 cities are identified as public transport city
- Airline ticket online booking market is 23.16 billion yuan, with an online penetration rate of 59.2%.
- Upgrading railway ticketing online Platform 12306

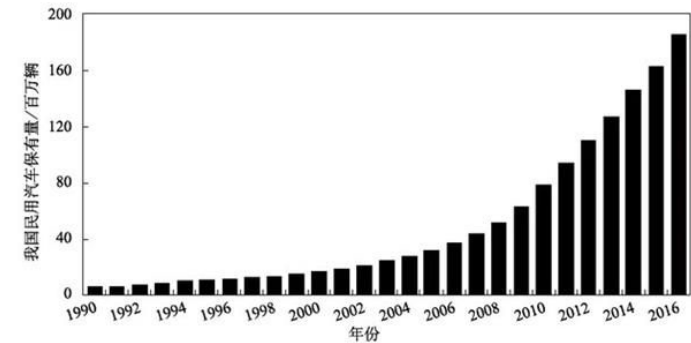


图1 1990—2016年全国民用汽车保有量^[10]



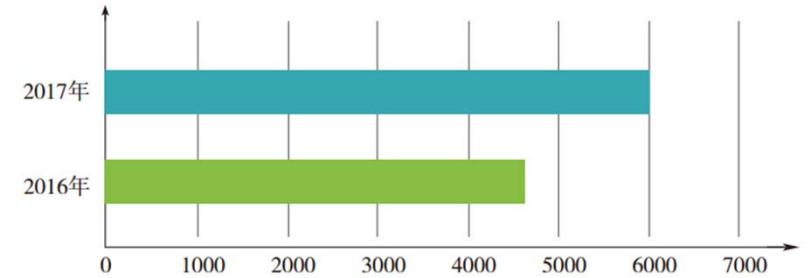
ITS for Urban traffic

- **Integrated** applications for traffic management and services
- Applications for **megalopolis traffic coordination**
- Many cities developed **urban transit intelligent systems**
- Public transit **smart card** systems have been connected in Guangdong and Yangtze River Delta area

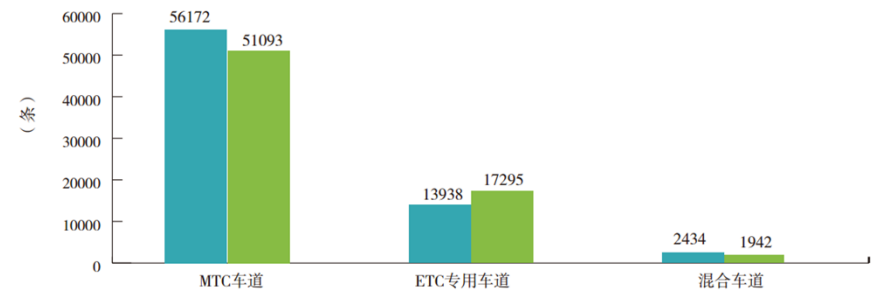


ITS for Highway management & services

- 2017 ETC volume reached **3.408 billion**, the whole network ETC use rate of 38% ; the total number of users is about **60.469 million**, accounting for about 30% of the car ownership.
- 17295 ETC-dedicated lanes were built, accounting for about 23% of the total number of highway lanes; the **dedicated lane coverage rate** of the main line toll stations is 99.19%.



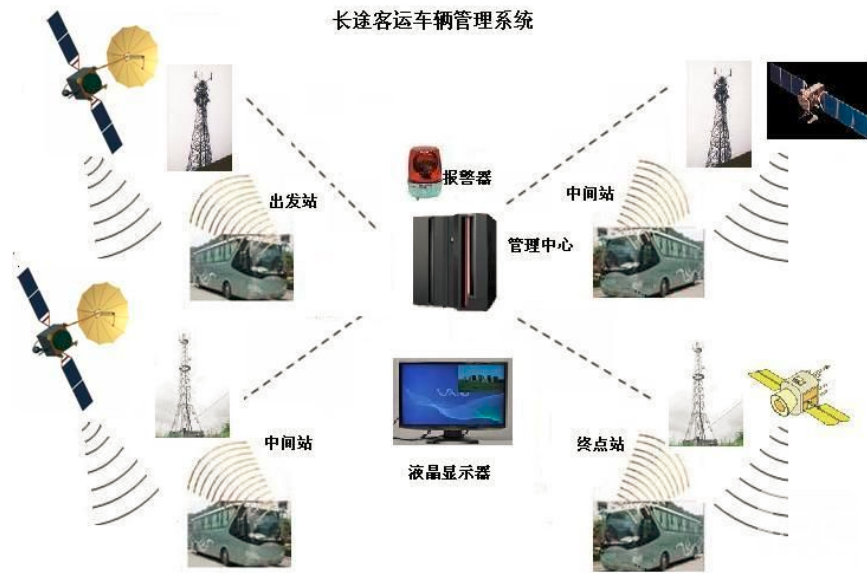
User Volume of 2016-2017



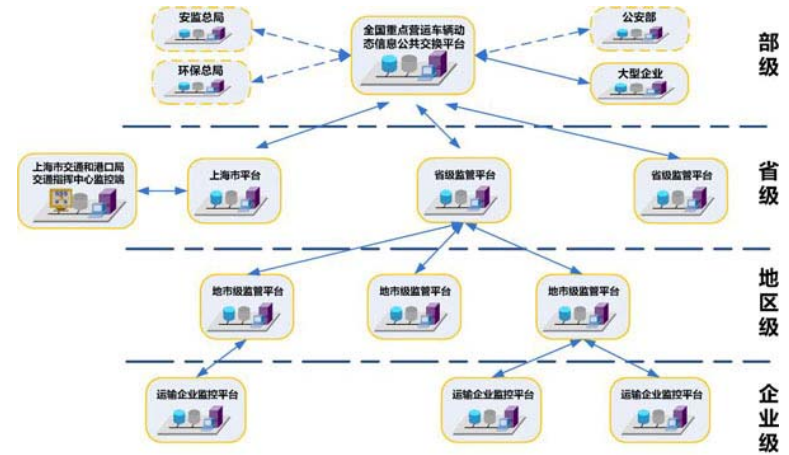
Total lane comparison of 2016-2017

Commercial vehicle networking and controlling

- More than 1 million special commercial vehicles involved, e.g. dangerous chemical transport

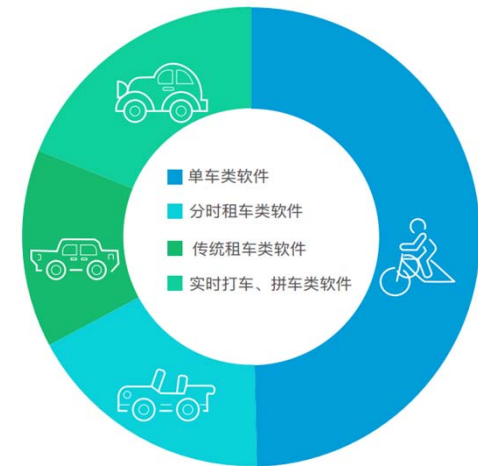
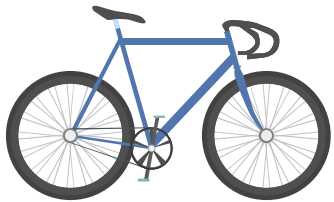


Management system of long-distance coach



Mobility service model and industry improving constantly

- **Carpooling APPs** are covered > 300 cities, with > 10,000,000 orders per day.
- The number of **shared mobility bills exceeded 10 billion**, and the market share reached 67%, ahead of the world shares the travel industry.
- The three shared mobility modes complemented public transport at different levels.



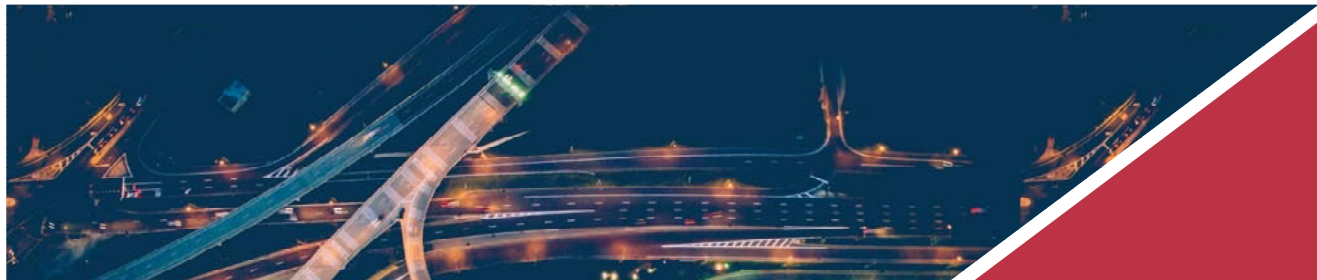
Shared mobility APP ratio of 2017

V2X & Automated Driving are Commercialized

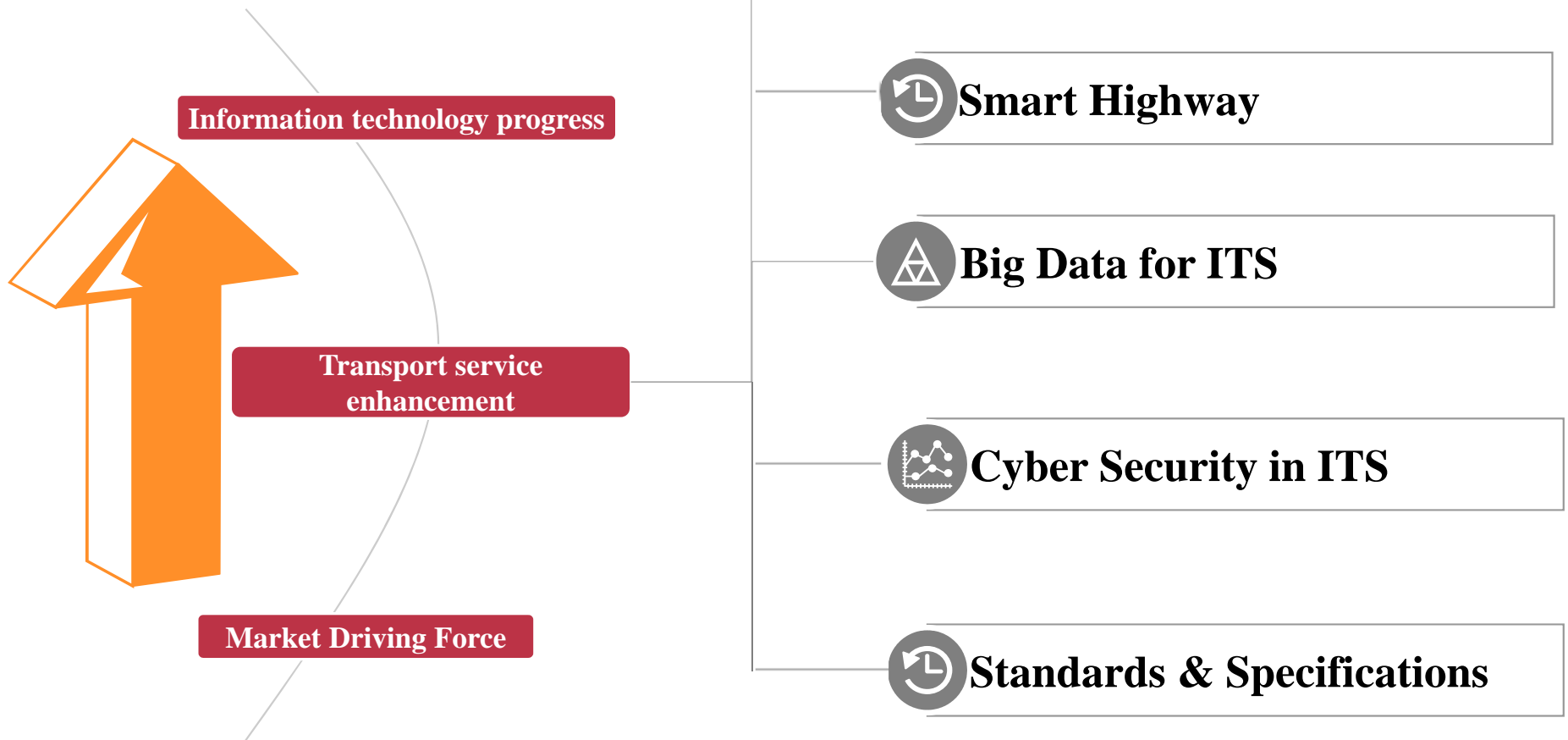
- In April 2018 , MOT, MIIT and MPS issued **“Specifications of Automated Driving Tests on Public Roads (Trial)”**, which will support and standardize intelligent network vehicles to test and verify public roads and maintain traffic safety.
- MOT issued **“Technical Guide for Construction of Automated Driving Closed Test Site (Provisional)”**, which specify the site, communication, power supply and other basic requirements of closed test field for automated driving.



/02 Hotspots of ITS in China



Hotspot of current ITS in China



Smart Highway

- In February 2017, the Ministry of Transport officially launched the **“Next Generation National Transportation Cybernetic System and Smart Highway Demonstration Project”**, and selected 9 provinces and municipalities as the undertaking units



Big Data for ITS

Basic Map

Road condition

Bus Stop

Index of Waterway

Flight schedule

Weather information

Floating population information

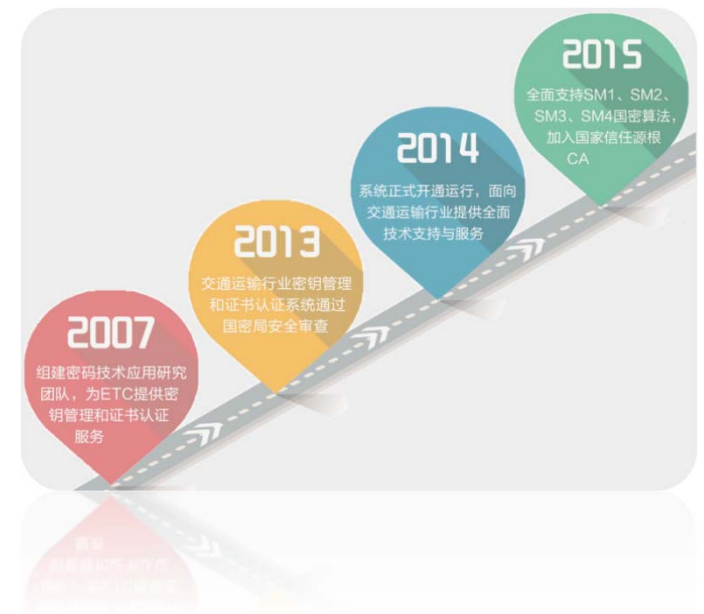


- Highway route information
- Road route information
- Real-time Location Data of Line Coach
- Highway Service Information
- Real-time location data of Taxi

Cyber Security in ITS

• Transportation Industry Key Management and Certificate Certification

- Entrusted by the Ministry of Transport to be responsible for the daily operation management and technical support of the **“Transportation Industry Key Management and Certificate System”**
- The only industry information security infrastructure of MOT
- Full support for national secret algorithms SM1, SM2, SM3, SM4
- Joined the national trust source root CA
- Achieve cross-certification under the national unified trust source

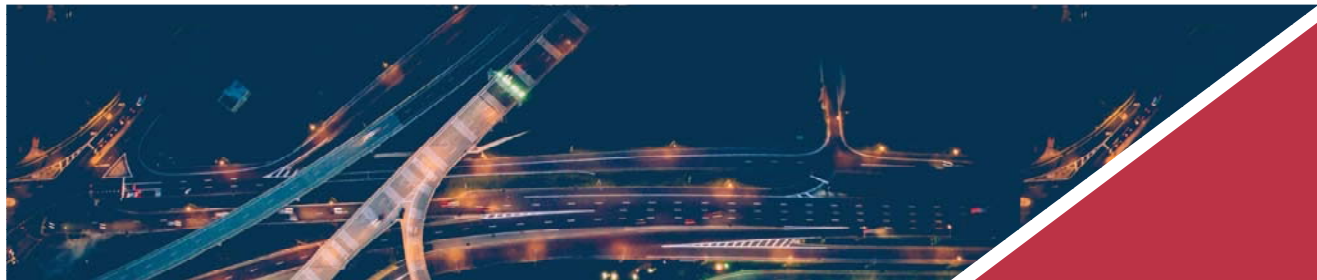


Standards & specifications

- In 2017, the **National Standards Committee of ITS** completed 99 various drafts of international standards
 - 28 new pattern proposals (NP)
 - 11 committee drafts (CD)
 - 7 internal committee voting (CIB)
 - 26 international standard drafts (DIS)
 - 7 final international standards (FDIS)
 - 10 drafts (DTS)
 - 6 draft technical reports (DTR)
 - 4 international standard review (SR)
- Officially released by the **International Organization for Standardization (ISO)**
 - Intelligent transport systems(ITS)—The use of personal ITS station to support ITS service provision for travelers— Part1:General information and use cases definitions

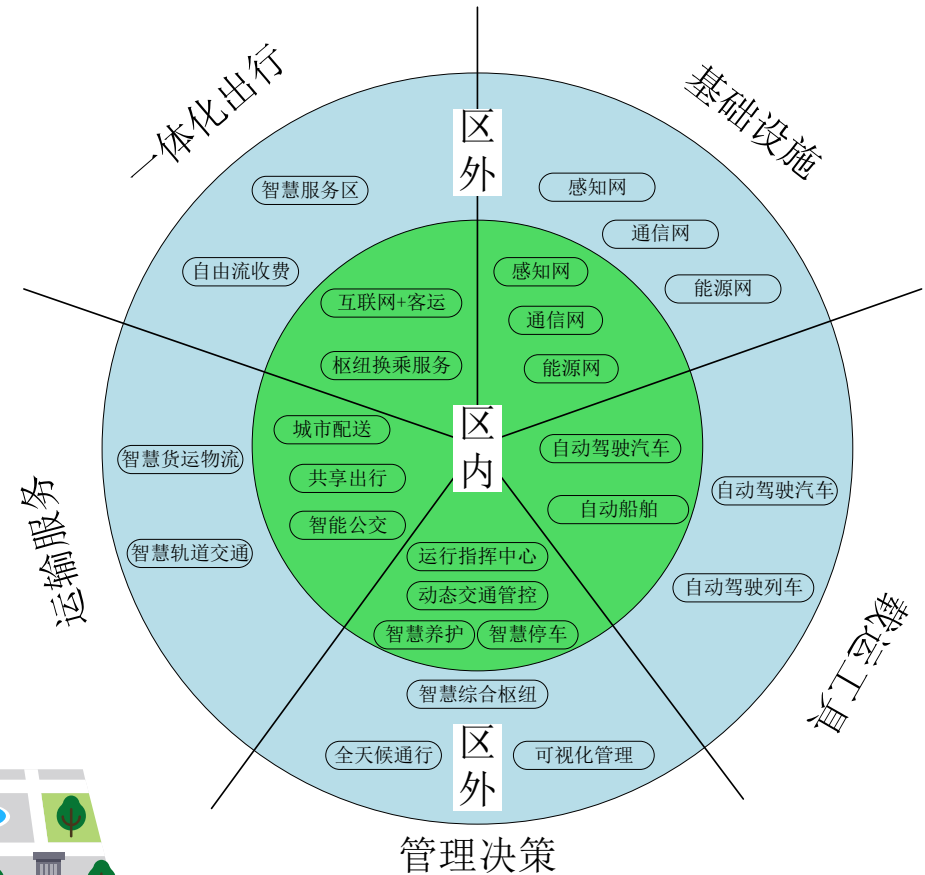
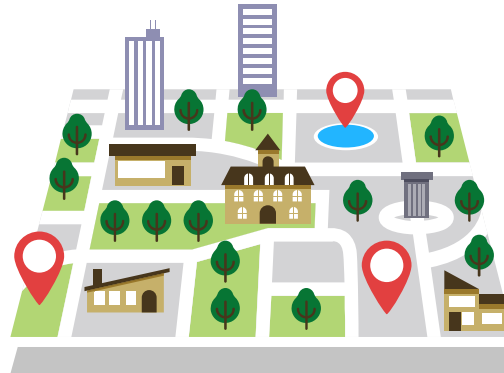
Standards & Specifications of ITS improve gradually

/03 Next Step Plans



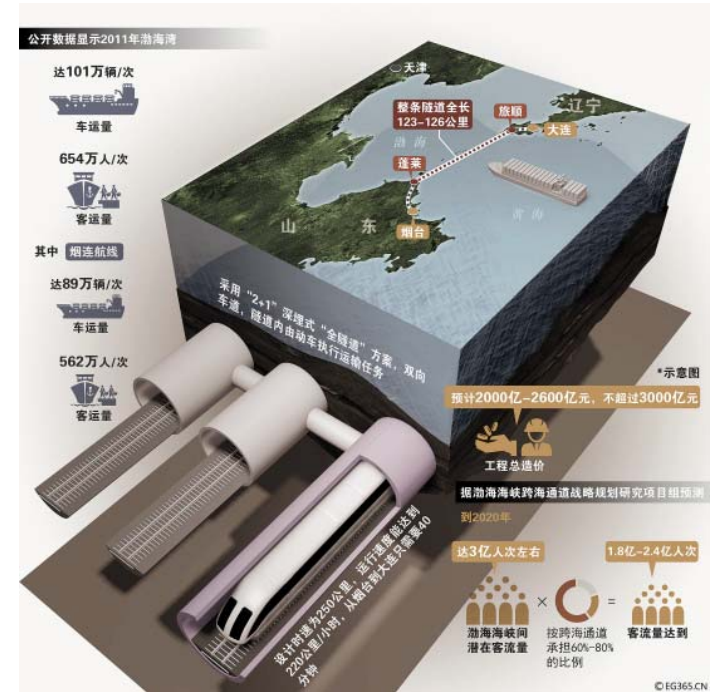
Five Directions

- Intelligent Infrastructure
- Automated Driving & V2X
- New Transport Services
- Transportation Management with Big Data
- Integrated or Multimodal Transportation



Relying on Demonstration Project

- **National Strategy: Building China's strength in transportation**
 - Xiong'an New Area
 - Intelligent Freight
 - Toll Collection of Highway
 - Intelligent high-speed railway
- **Keep on the “Next Generation National Transportation Cybernetic System and Smart Highway Demonstration Project”**
- **Intelligent Transportation Development Action Plan (2017-2020)**





Thank You

RIOH of Ministry of Transport. PR

Hou Dezao