Thoughts on Recent Development of ITS

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Outline

1. Recent development of ITS
2. Status of ITS standardization
3. Thoughts and prospects
Recent development of ITS —— Background

- Transportation is the **basic, pilot and strategic** industry of the national economy

By 2020: **Safe, Convenient, Efficient, Green** modern integrated transportation system

2017
State Council
Development Plan of Modern Integrated Transportation System in 13th Five-Year Plan

2016
NDRC, MOT
Implementation Plan of Promoting ‘Internet+’ Convenient Transportation and Intelligent Transportation System

推进“互联网+”便捷交通 促进智能交通发展实施方案
Recent development of ITS —— *Integrated Transportation System*

• **Planning Principles**
  - Coordinated, Efficient
  - Moderate, Integrated
  - Innovation driven, Safe and Green

• **Primary Objectives**
  - Improve traffic network density
  - Comprehensive and efficient integration
  - Upgrading transport services
  - Extensive use of intelligent technology
  - Enhance safety and environmental friendliness
Recent development of ITS —— Integrated Transportation System

• Main Task
  - Improve infrastructure network layout
  - Strengthen strategic supporting role of transportation
  - Accelerate integration process of transportation services
  - Enhance intelligent level of transportation
  - Promote environmental friendliness
  - Construct emergency system
  - Expand new types of business
  - Deepen the reform of transportation
  - Strengthen policy support
Recent development of ITS —— Integrated Transportation System

**Main Tasks**

- Improve infrastructure network layout
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**Specific measures**

- Digitization, networked and intellectualized infrastructure and vehicles
- Demonstrate vehicle-infrastructure cooperation
- Develop fully automated driving vehicles
- Build a new generation traffic information network
Recent development of ITS —— Integrated Transportation System

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**Key Projects**

- Internet access of high-speed rail and aircraft
- Sharing of transportation data
- Coordinated operation and service of integrated traffic hub
- New generation of national traffic control network
- Extension of ETC application
- Popularize Beidou navigation system
Recent development of ITS —— ‘Internet+’ Convenient Transportation

• Under the concept of ‘Internet+’, promote integration of transportation and internet, enhance intellectualization of transportation

• Principles

  Innovative development  Market-oriented operation  Government guidance  Open sharing

• Objectives

Construct ‘3 service and management systems, 2 supporting systems’
ITS system, realize independent development and large-scale application of advanced technology and equipment, improve service efficiency and governance capacity of transportation
Recent development of ITS —— ‘Internet+’ Convenient Transportation

- 3 + 2 systems

- ‘Internet+’ Convenient Transportation System
  - Intelligent Transport Service System
  - Intelligent Management System
  - Intelligent Decision Making System
  - ITS Infrastructure Supporting
  - Standardization and Technical Supporting
  - Good Development Environment

推进“互联网+”便捷交通
促进智能交通发展实施方案
Recent development of ITS —— ‘Internet+’ Convenient Transportation

- **Tasks**

- Information service
- One-stop ticket service
- Extension of ETC service
- Beidou navigation system
- Integrate with internet

[Diagram showing 'Internet+' Convenient Transportation with associated systems like Intelligent Transport Service System, Good Development Environment, Standardization and Technical Supporting, Intelligent Management System, Intelligent Decision Making System, and ITS Infrastructure Supporting.]
Recent development of ITS —— ‘Internet+’ Convenient Transportation

- Tasks

- Improve traffic control system
- Improve automation level of equipment and vehicles
- Develop connecting and through traffic, multi-modal transportation
Recent development of ITS —— ‘Internet+’ Convenient Transportation

- Tasks

- Construct emergency and supervision system
- Improve decision supporting system
Recent development of ITS —— ‘Internet+’ Convenient Transportation

- **Tasks**

  - Advanced perception monitoring system
  - Next generation traffic information network
  - Opening and sharing of transportation data
Recent development of ITS —— ‘Internet+’ Convenient Transportation

- Tasks
  - Develop technical standards
  - R&D of ITS technology
  - Accelerate industrialization of ITS
Recent development of ITS —— ‘Internet+’ Convenient Transportation

• Tasks
  ● Market environment
  ● Credit information
  ● Upgrade supervision mode
  ● Network security
  ● Laws and regulations

• 27 Key demonstration projects

* Involve MOT、NDRC、MIIT、MPS、CAAC、CRC，and local government.
Recent development of ITS —— Summary

- Strategic position has been strengthened
- Tasks are clear and highly targeted
- Projects are highly operational
- Cooperation with multi-sections and areas

The 13th Five-Year will become an important strategic opportunity for ITS development
Recent development of ITS —— Research hotspots and development trends

- Transportation is typical complex system
- After decades of development, the informatization level has been greatly improved
- ITS technology is developing from local level to system level
Recent development of ITS —— Research hotspots and development trends

• Based on IOT, Mobile communication, AI, Big data, Cloud computing, Intelligent Driving and Vehicle-Infrastructure Cooperation is becoming research hotspot and developing trends
Recent development of ITS —— Research hotspots and development trends

- Combination of: **vehicle automation, intelligent infrastructure, coordinated operation**
- Covering **automobile manufacturing, electronic chips, infrastructure, mobile communication** and other industries, stimulating related industries.
Recent development of ITS —— **Research hotspots and development trends**

- Develop **on-board system** integrated with short-range communication, electronic identification, precise positioning, active control. Construct **intelligent infrastructure**, providing information network access, drive guidance and safety warning services. Research highly **automated driving** technology.
- Speed up the construction of **V2X network**
- Develop **standards** about **V2X** communication and equipment interface
Outline

1. Recent development of ITS
2. Status of ITS Standardization
3. Thoughts and prospects
ITS Standardization —— International Level

• Standardization Organization
ITS Standardization —— International Level

• About ISO/TC204

- Founded in 1992, working on: traveler information, traffic management, public transport, commercial transport, etc.
ITS Standardization —— International Level

- About ISO/TC204
  - 12 active WGs
  - Released 230 standards

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ITS Standardization —— Domestic Level

- **Technical committee on ITS, SAC**: Founded in 2003, SAC/TC268, responsible for ITS standardization in China. Released 90 national/industry standards.

- **China ITS Industry Alliance**: Founded in 2013, focus on community standard. Released more than 60 standards.
  - SAC/TC114, Technical Committee of Auto Standardization
  - SAC/TC485, Technical Committee on Communication
  - SAC/TC230, Technical Committee on Geographic information / Geomatics
  - SAE-China
ITS Standardization —— **Summary**

- With the development of ITS industry, the **demand of ITS standards** is more and more urgent.
- Standardization has gained more and more attention:
  - MOT, Standardization plan of Intelligent Driving & Vehicle-Infrastructure Cooperation
  - MIIT, propose guidelines for standard system of V2X network
  - MPS, drafting standards for electronic registration identification of the motor vehicle
- Standardization has risen to **national strategy**. In the 13th Five-Year, the demand of ITS standardization is strong, related departments and standardization organizations should cooperate with each other.
Outline

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2. Status of ITS Standardization
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Thoughts and Prospects

• A good working mechanism
  - Strengthen top-level design
  - Make standard become effective policy means
  - Let standards play important role in industry regulation
Thoughts and Prospects

• Building multi-mode standardization platform

- Integration of International standard, National/Industry standard and Community standard
Thoughts and Prospects

• Construct standard system

☐ Consider current situation of technology and industry

➢ **Intelligent Driving**: improve ADAS standards

➢ **Vehicle-Infrastructure Cooperation**: analysis application scenario, compatible with different technical routes

➢ **Intelligent Infrastructure**: develop standards of precise digital map, ITS station
Hope to deepen cooperation with oneM2M in ITS standardization