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

“十三五”现代综合交通运输体系发展规划

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

2016

NDRC, MOT

推进“互联网+”便捷交通 促进智能交通发展实施方案

Implementation Plan of Promoting ‘Internet+’ Convenient Transportation and Intelligent Transportation System

Recent development of ITS —— **Integrated Transportation System**

"十三五"
现代综合交通运输体系
发展规划

- **Planning Principles**

Coordinated, Efficient	Moderate, Integrated	Innovation driven, Safe and Green

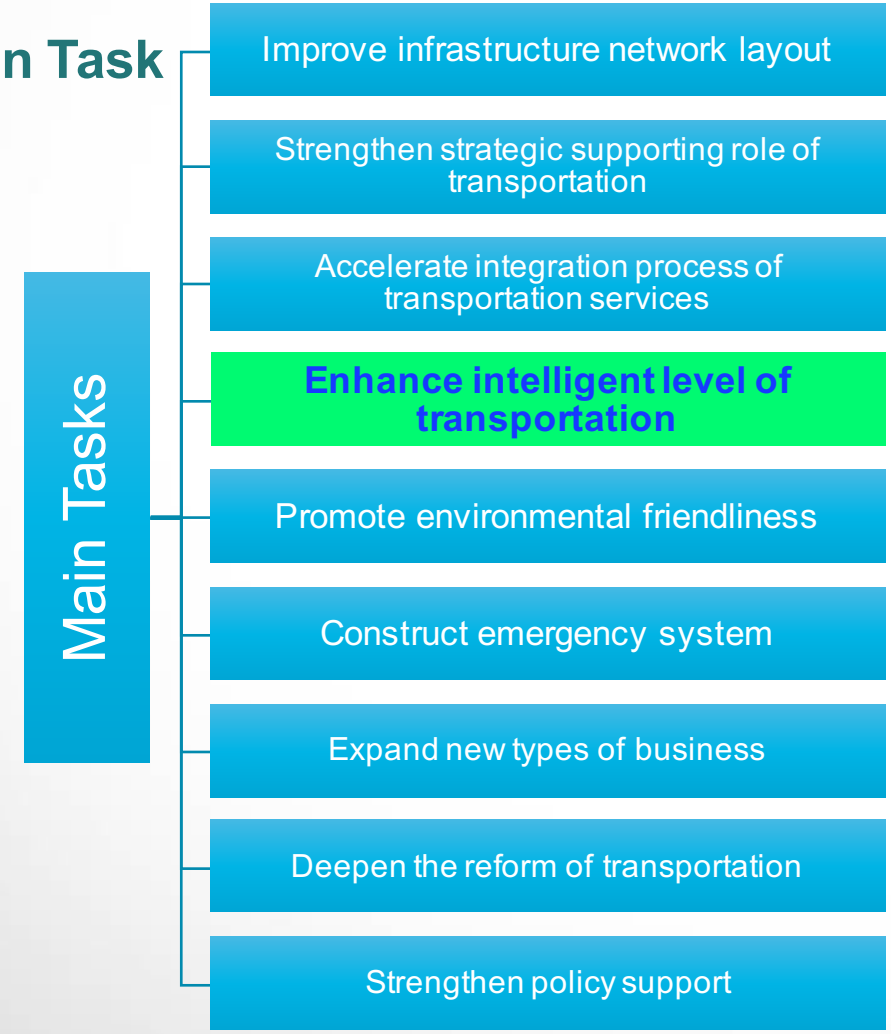
- **Primary Objectives**

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

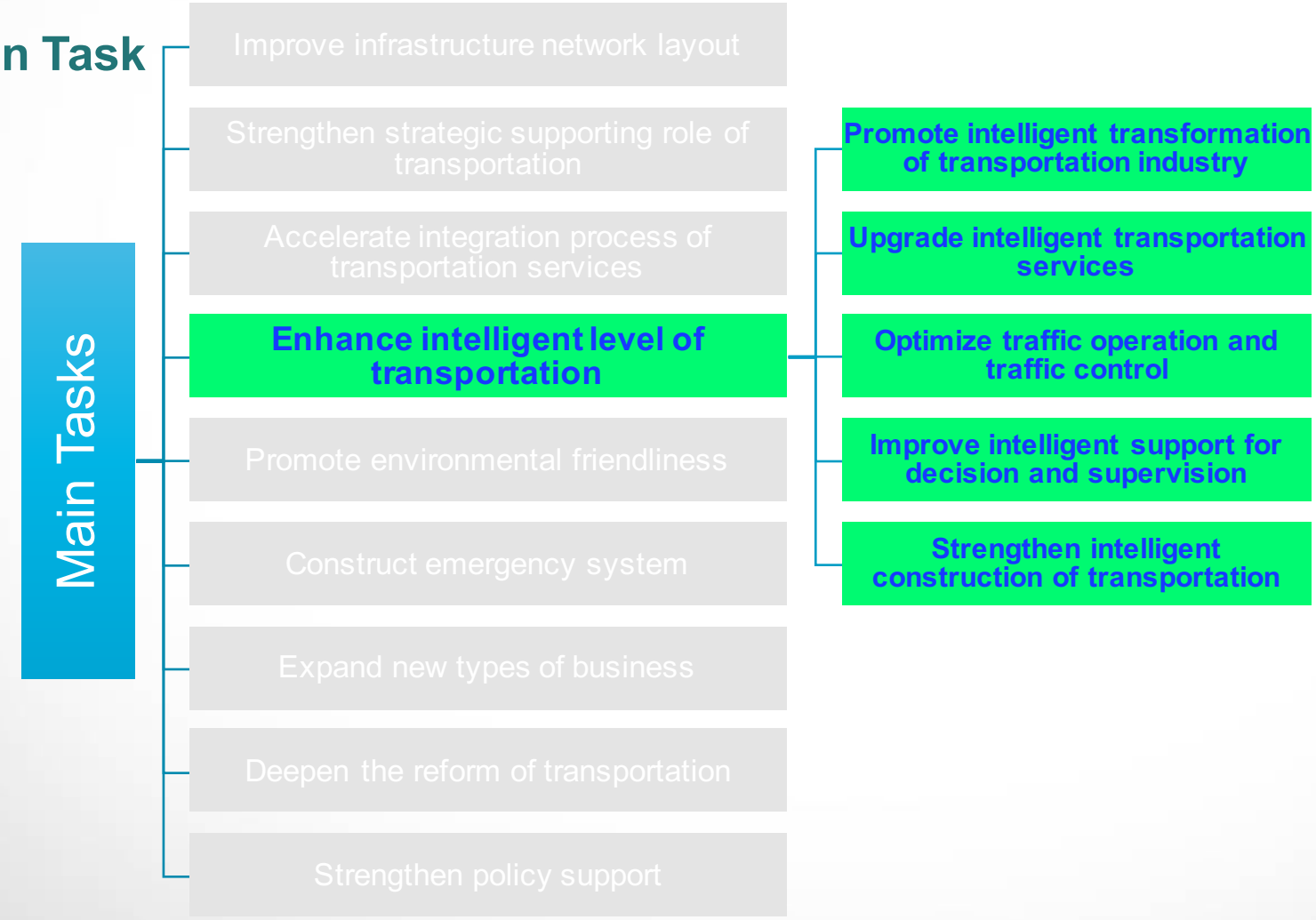
"十三五"
现代综合交通运输体系
发展规划

- **Main Task**



Recent development of ITS —— Integrated Transportation System

- **Main Task**

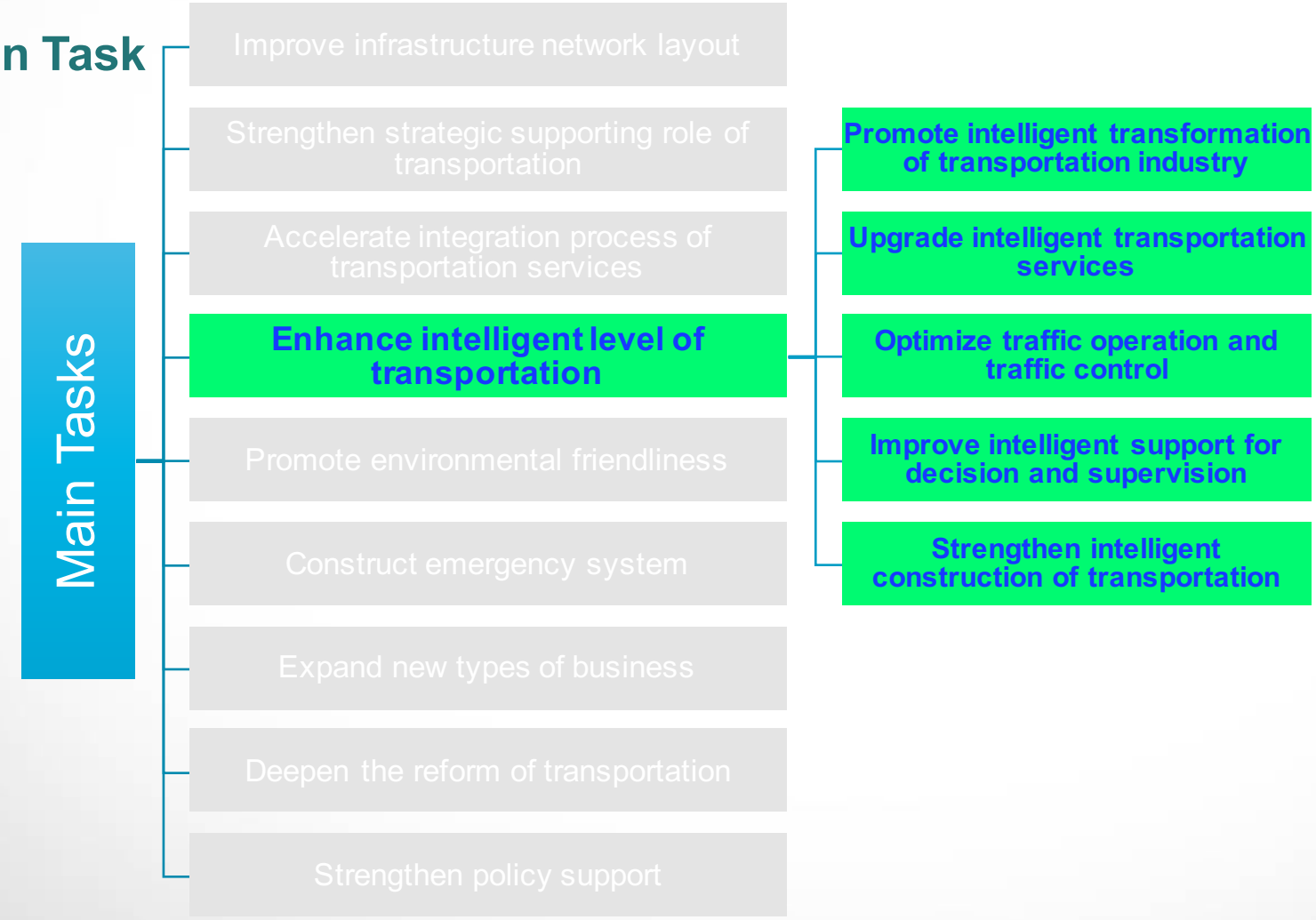


Specific measures

- 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

- **Main Task**



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

推进**"互联网+"便捷交通**促进**智能交通发展**实施方案

- **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

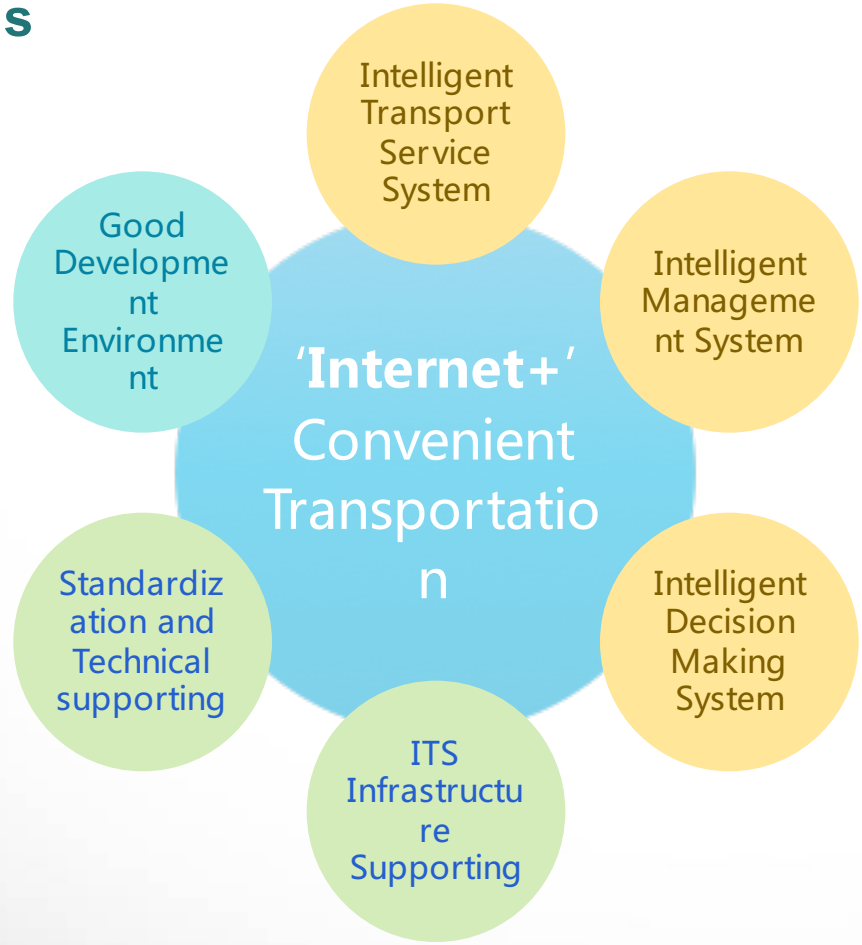
- **Objectives**

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

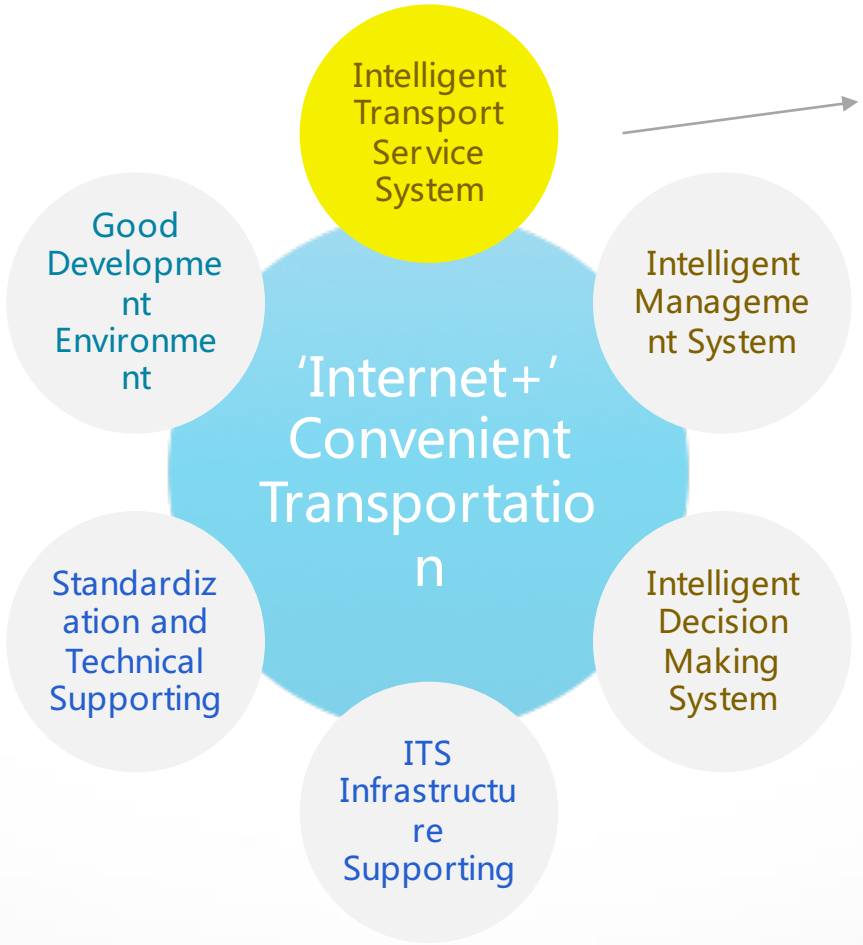
推进“**互联网+**”**便捷交通**促进**智能交通发展**实施方案

- **3 + 2 systems**



Recent development of ITS —— ‘Internet+’ Convenient Transportation

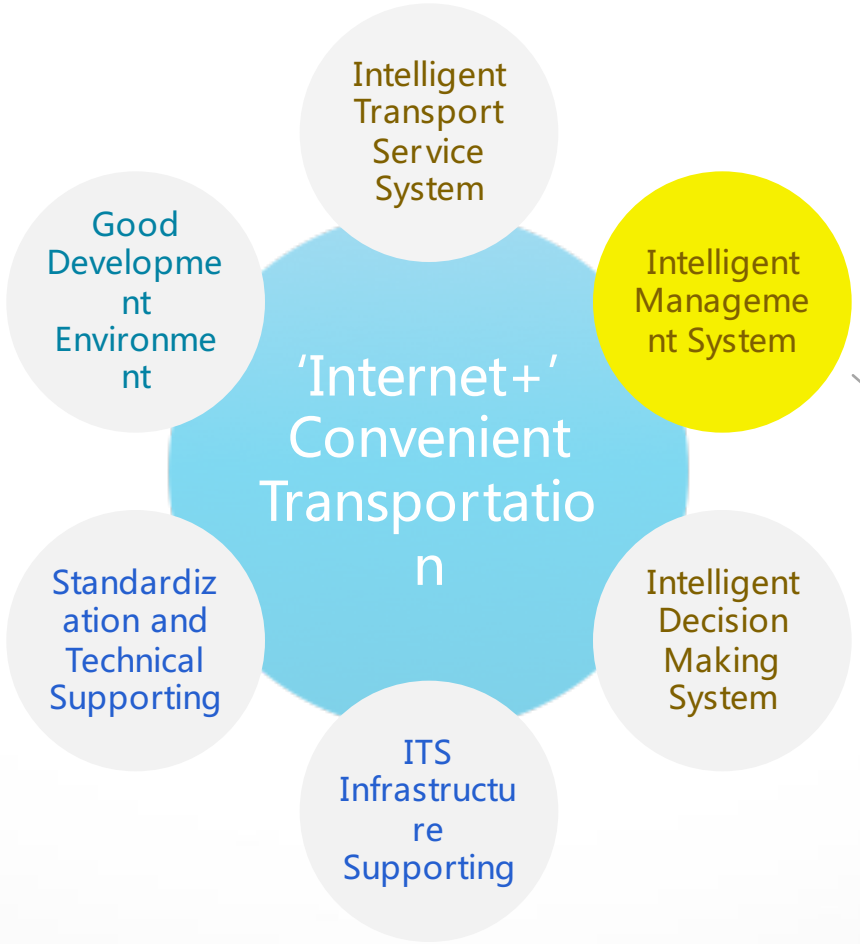
- **Tasks**



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

Recent development of ITS —— ‘Internet+’ Convenient Transportation

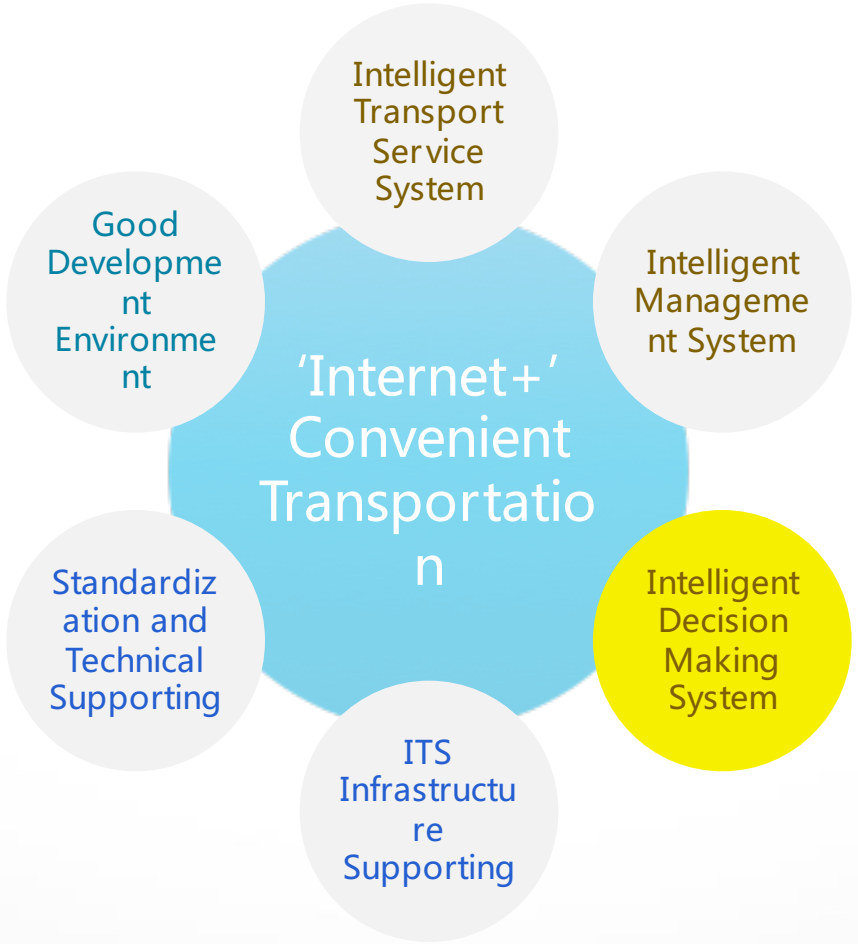
- **Tasks**



- **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

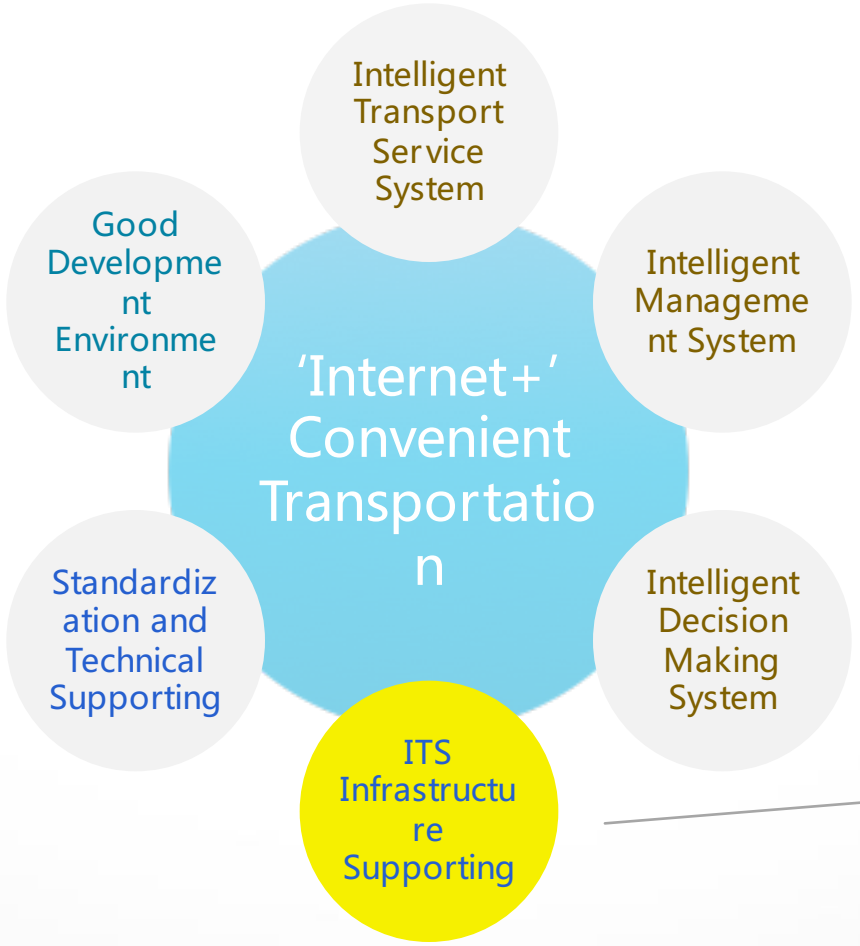
- **Tasks**



- **Construct emergency and supervision system**
- **Improve decision supporting system**

Recent development of ITS —— ‘Internet+’ Convenient Transportation

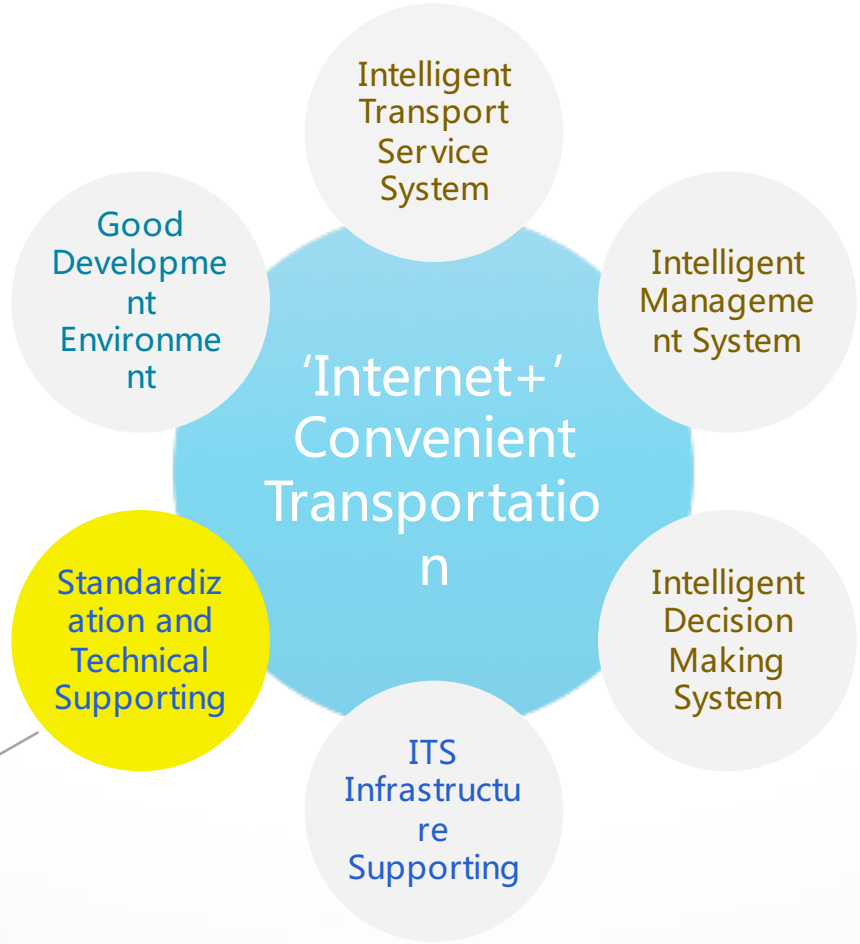
- **Tasks**



- **Advanced perception monitoring system**
- **Next generation traffic information network**
- **Opening and sharing of transportation data**

Recent development of ITS —— ‘Internet+’ Convenient Transportation

- **Tasks**

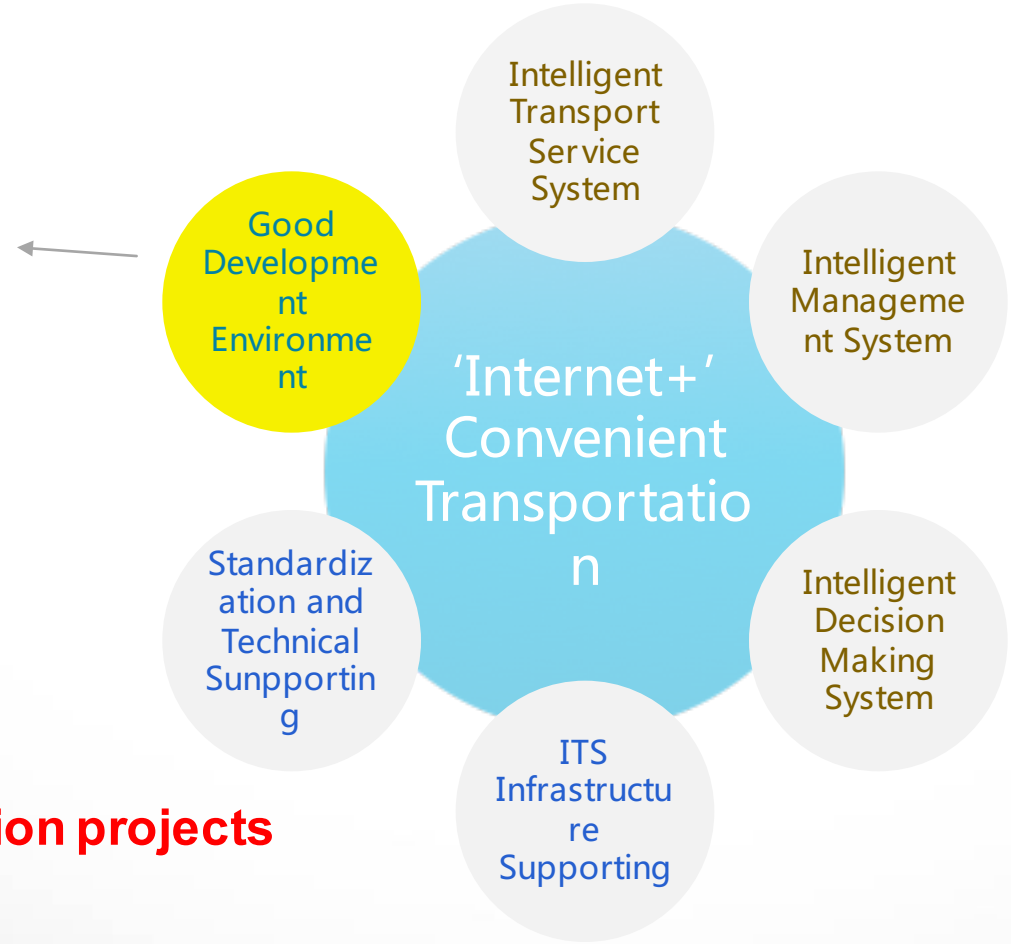


- **Develop technical standards**
- **R&D of ITS technology**
- **Accelerate industrialization of ITS**

Recent development of ITS —— ‘Internet+’ Convenient Transportation

- **Tasks**

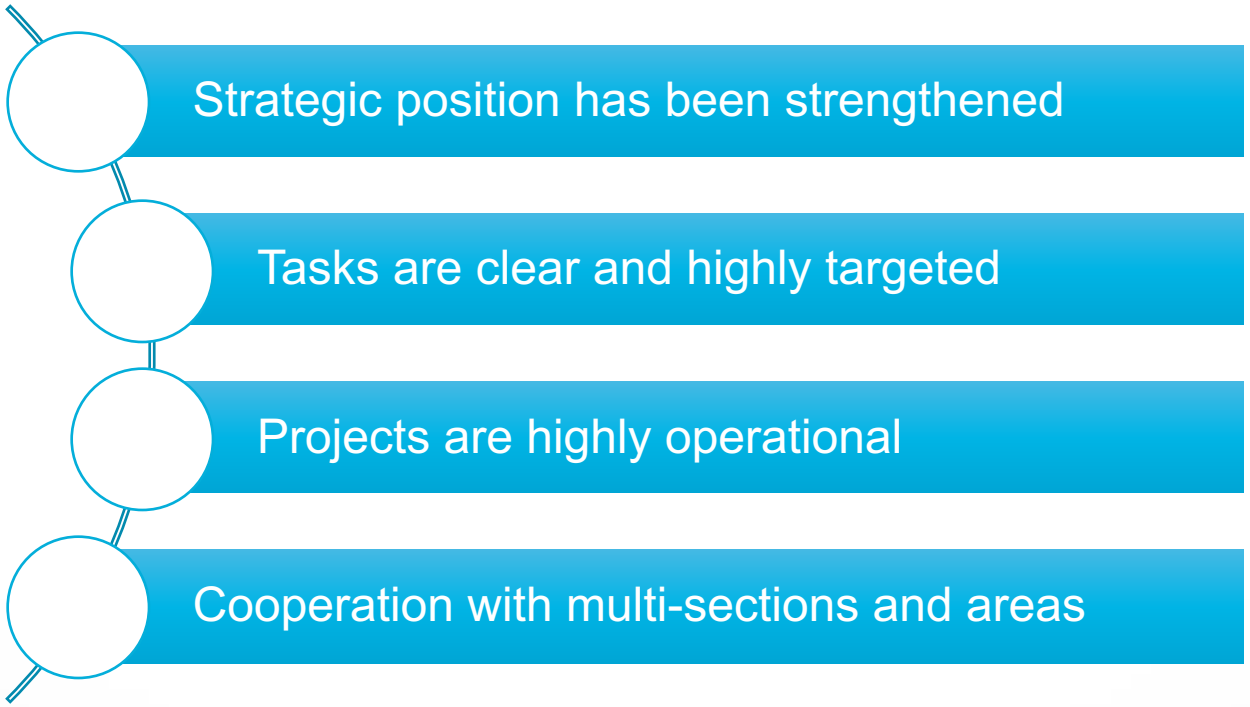
  - **Market environment**
  - **Credit information**
  - **Upgrade supervision mode**
  - **Network security**
  - **Laws and regulations**



- **27 Key demonstration projects**

* Involve **MOT、NDRC、MIIT、MPS、CAAC、CRC，** and local government.

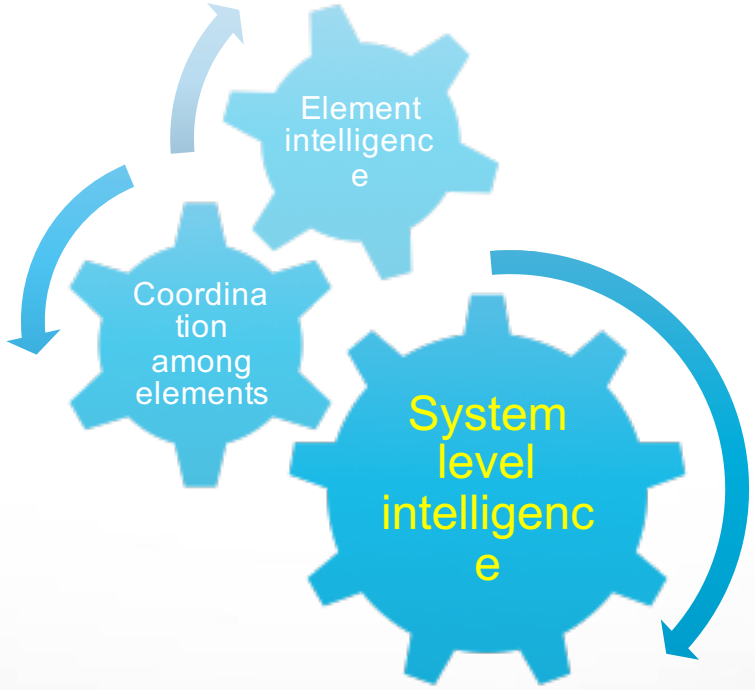
Recent development of ITS —— **Summary**



The 13th Five-Year will become an important **strategic opportunity** for ITS development

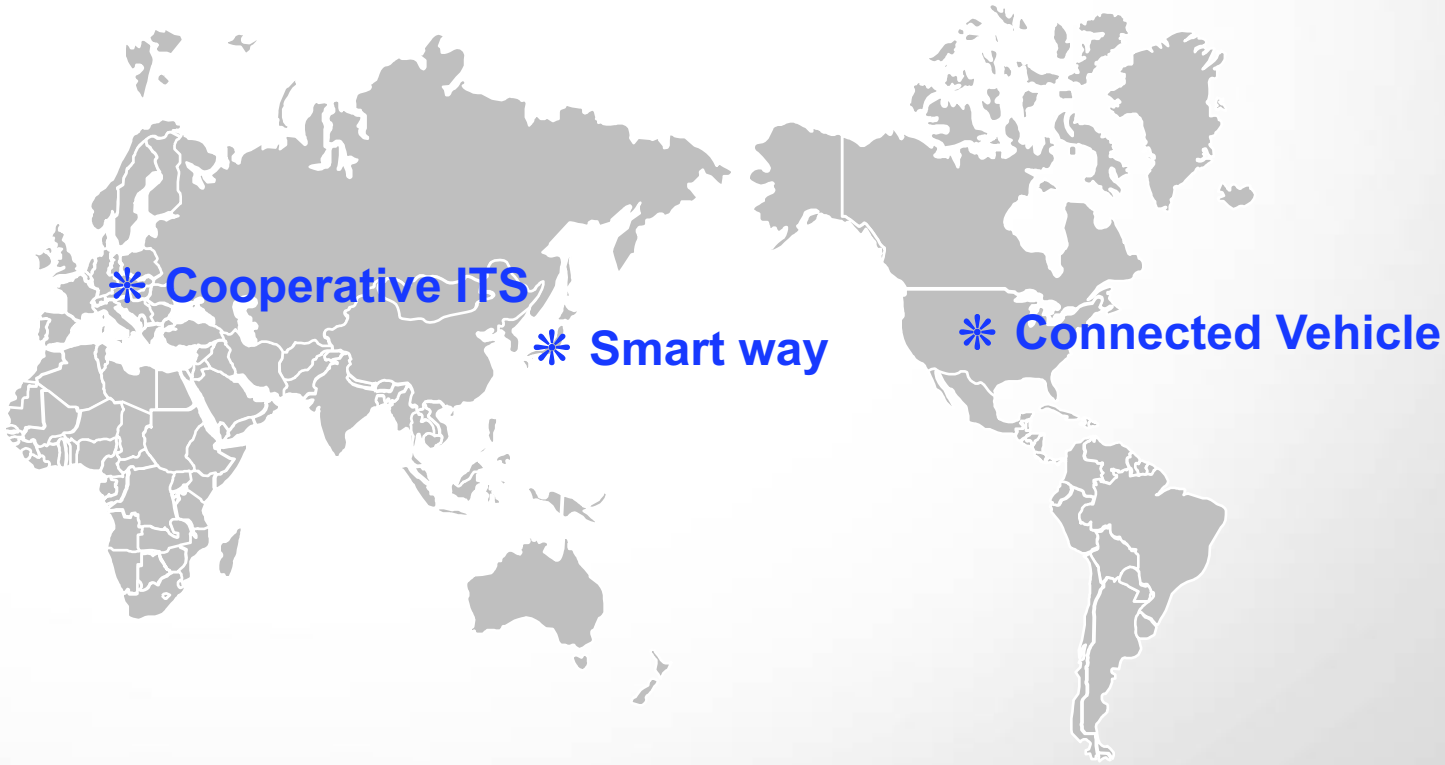
Recent development of ITS —— **Research hotspots and development trends**

- 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**



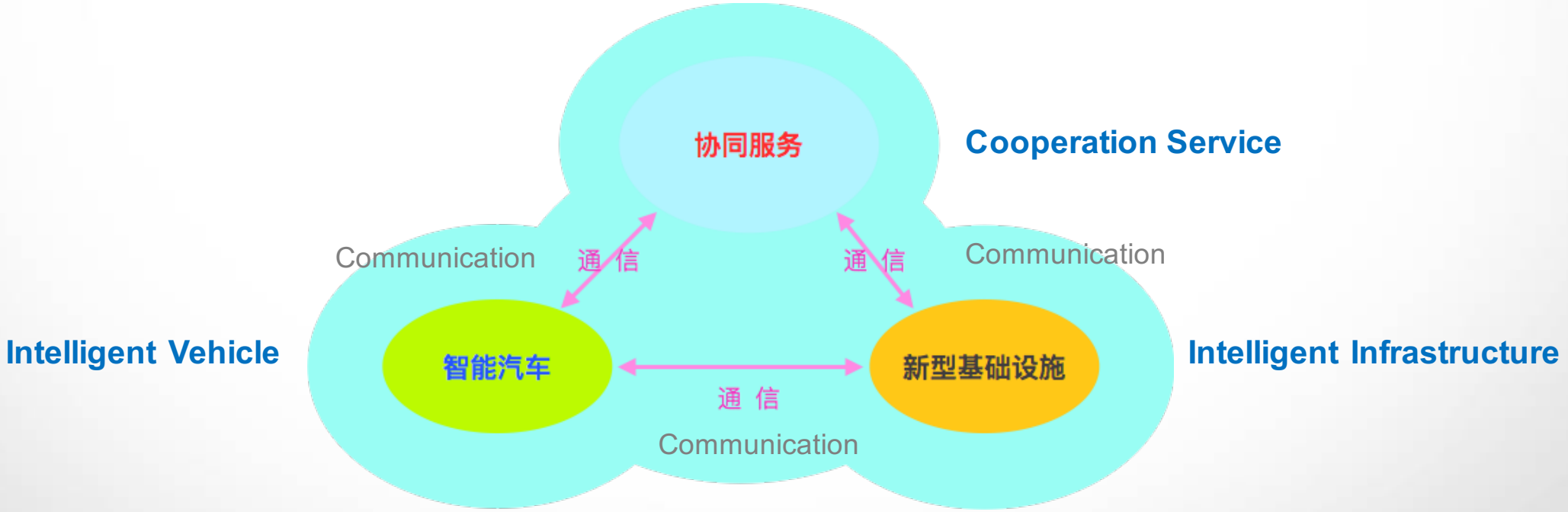
Recent development of ITS —— **Research hotspots and development trends**

- 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

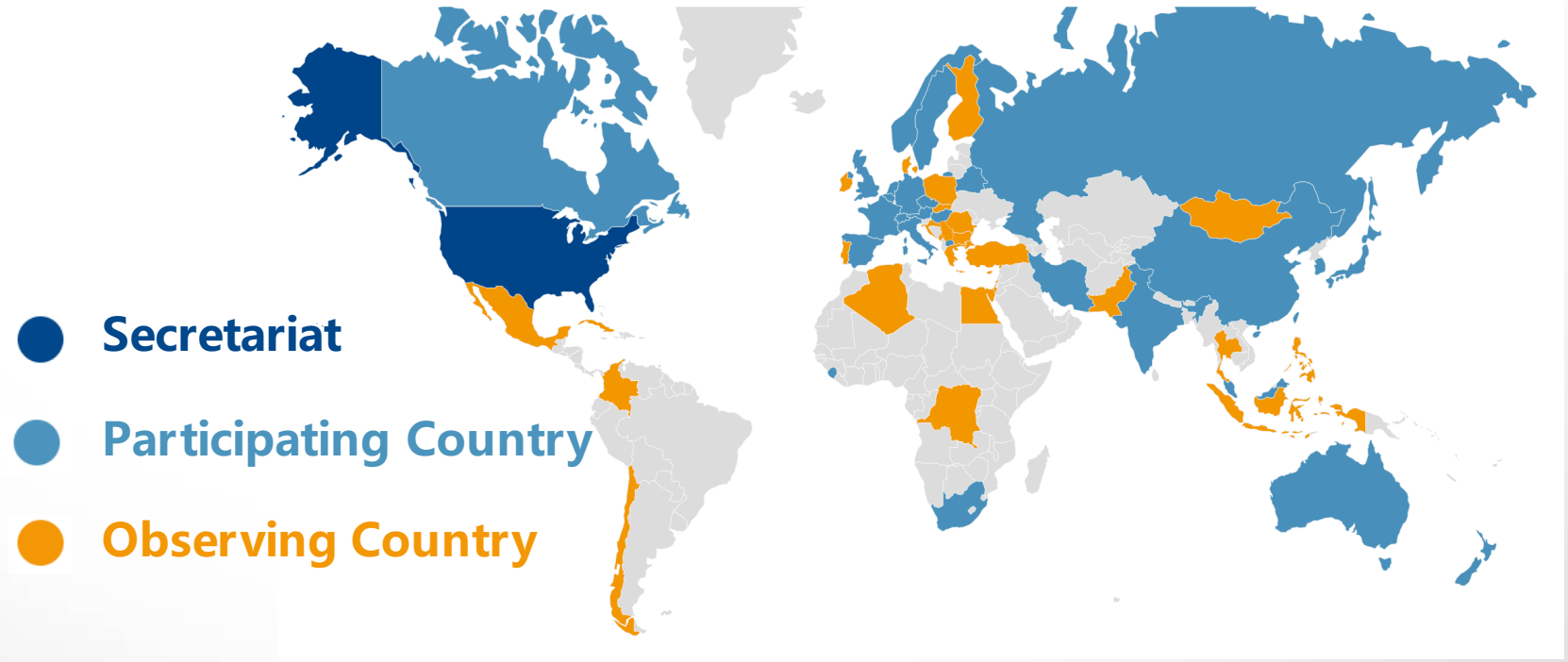
TC 204

ISO/TC22

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

WG	Focus on	Convener
WG 01	Architecture	UK
WG 03	ITS database technology	Japan
WG 04	Automatic vehicle and equipment identification	Norway
WG 05	Fee and toll collection	Sweden
WG 07	General fleet management and commercial/freight	Canada
WG 08	Public transport/emergency	USA
WG 09	Integrated transport information, management and control	Australia
WG 10	Traveler information systems	UK
WG 14	Vehicle/roadway warning and control systems	Japan
WG 16	Wide area communications/protocols and interfaces	USA
WG 17	Nomadic devices in ITS systems	Korea
WG 18	Cooperative systems	Germany

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

THANKS