



中国交通通信信息中心

www.cttic.cn

Application & Development of GNSS in Transportation of China

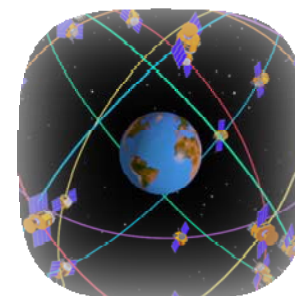
Li Jing

China Transport Telecommunication & Information Center

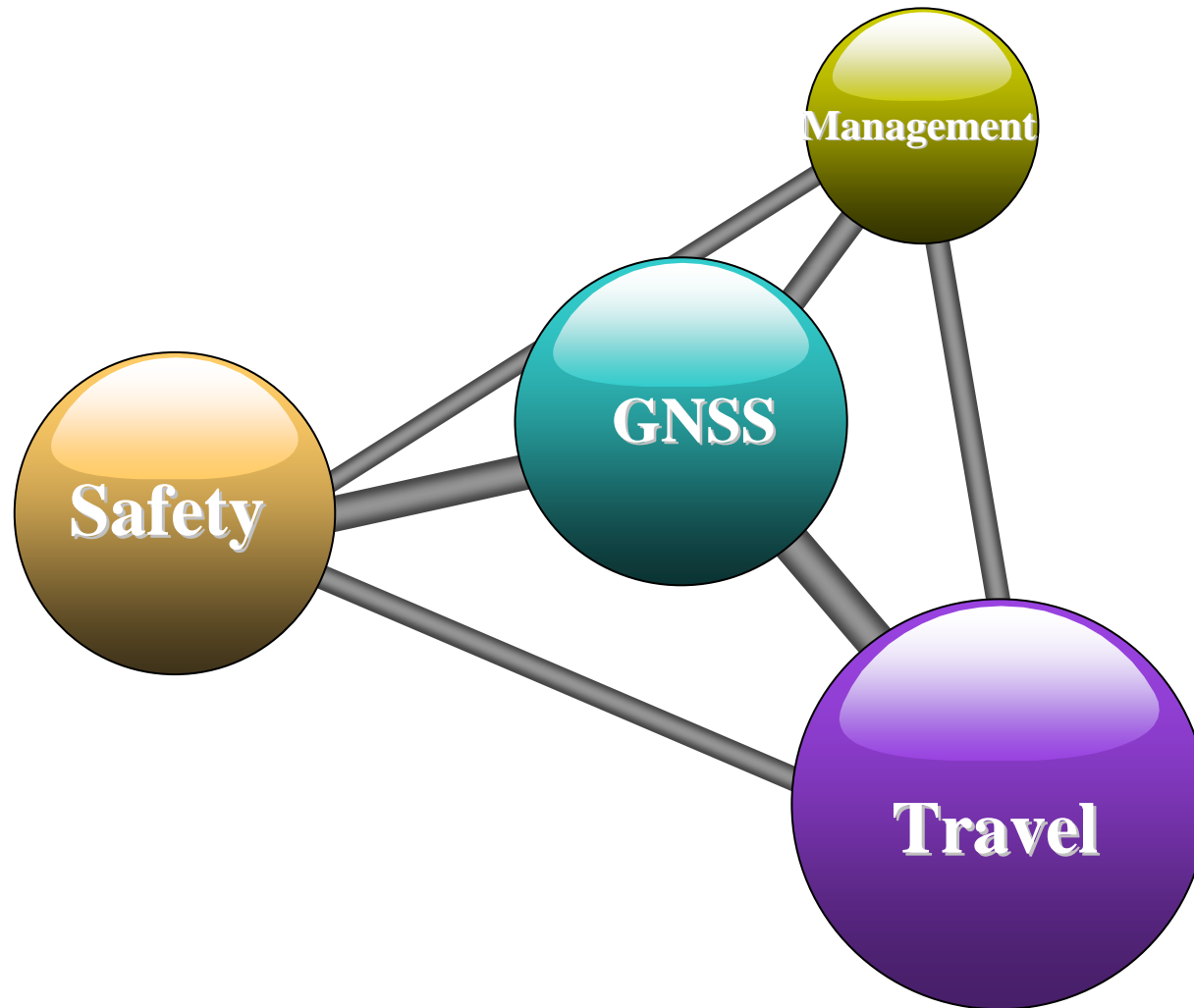
2011.9

Features of China Transportation

- Cars: more than 60M
- Expressway: more than 4M Km
- Watercrafts: more than 0.25M
- Waterway: more than 124 thousand Km
- Manage difficulty: crossing administrative divisions
- Location Information has played an important role in the transportation of China



The Roles of GNSS



Safety monitoring

- ✓ Position monitoring is the main application of GNSS in transportation management of China
- ✓ Transport companies, cargo owners can acquire the real-time vehicle positions
- ✓ Dangerous driving behaviors are monitored and analyzed



Application Status- Expressway



The image displays the application status for expressways, featuring a control room, a software interface, and a handheld PDA device.

全国重点营运车辆公共服务平台

总控台 | 车辆本地地图显示 (Google地图显示)

入网平台数	在线平台数	入网车辆数	两客一危入网数	在线车辆总数
31	30	729668	316806	87477

疲劳报警

危险品GPS信息公共交换平台

实时信息

车牌号	时间	经度	纬度	方向	车辆状态	货物名称
浙C-6789	2009-08-11 17:29:32	E121°29'	N31°14'	东偏南 30°	点火	甲醇
浙C-6789	2009-08-11 17:29:32	E121°29'	N31°14'	北偏东 45°	点火	硝酸
浙C-6789	2009-08-11 17:29:32	E121°29'	N31°14'	西偏北 20°	熄火	氯化钾

CTTIC C5000J

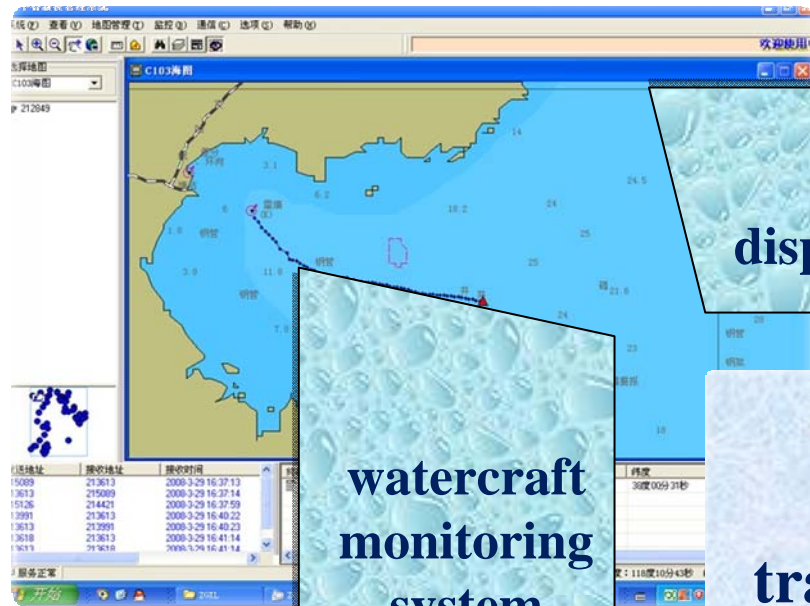
重点营运车辆移动稽查系统

用户名: shi

用户密码: *****

CTTIC

Application Status -Waterway



watercraft
dispatching system

watercraft
monitoring
system

船舶两啊
Waterway
transportation

watercraft
position
report and
SAR system

waterway transportation
control system



Needs of Transportation

- **People want to know:**

Where am I?

Where are things I am interested in?

How to go?

How to save time?

How to travel safely?

.....



- **Needs of Businessmen**

Where are vehicles located

What are the status of vehicles

How to command vehicles

.....

- **Needs of Government**

How's about traffic?

How to identify the illegal driving?

How to guarantee safety?

.....



Prospect of Application

Hybrid NAV-COM



Effect of Application



Choose route



Construction 500m ahead



Fog zone, there is a car 500m ahead



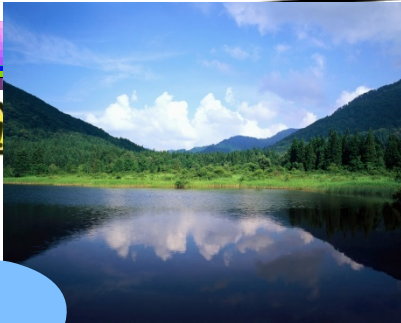
Sharp turn 200m ahead.



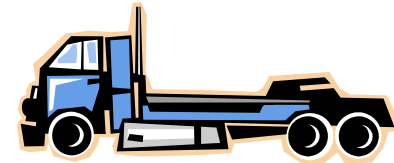
Attention! Dangerous goods



Traffic Jams about 1km. Change the route



e



Slow down! Crash about 2km



Attention pedestrian about 100m



Parking Induction

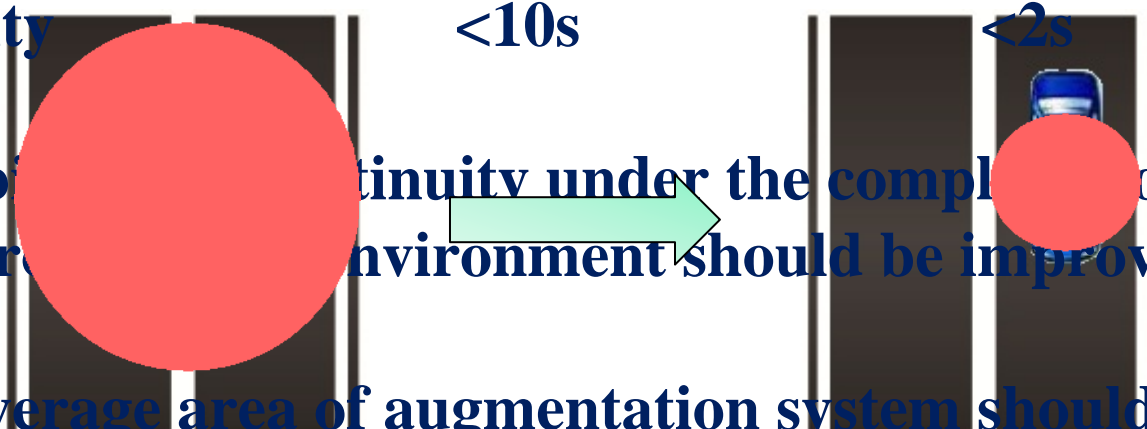


- To arrive the destination safely

Development Bottleneck

- **Parameter**

	Now	Future
Positioning accuracy	5m	10cm
Integrity	<10s	<2s
- **Availability and continuity under the complex geographical and electromagnetic environment should be improved.**


- **The coverage area of augmentation system should be larger and the cost be decreased.**
- **The vulnerability of information system based on position**

Critical aspects



- Wide area sub-meter real-time positioning technology
- Regional vulnerability estimation & mitigation of GNSS
- Further application strategy with no commitment on precision and continuity
- Privacy protection in LBS
- Comprehensive augmentation system for transportation

Summary



- GNSS has broad application in the transportation of China, virtually become the critical infrastructure
- Key points: accuracy improvement, Vulnerability, privacy protection and technology integration
- User community pursues a channel with the system developers and providers regarding distinct requirements
- Greater use and more importance in the future request development of hybrid NAV-COM in all areas

**Thank you for your
attention!**