Overview of BeiDou/GPS Applied in Road Transportation

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ICG 7  11/5/2012
1. Current status of vehicle monitoring system

2. The usage of BD/GPS in vehicle monitoring system

3. The future of the high precision GNSS applied in vehicle monitoring system
Overview of Chinese Road Transportation

Status of road transportation in 2011:

- Vehicles: 219 millions
- Commercial vehicles: 12,637,500 vehicles, which includes 630,500 dangerous goods transport vehicles, and 268,300 large-scale passenger buses.
- Traffic mileages: 4,106,400 km
- Volume of passenger traffic: 332,862,000,000 times
- Volume of freight: 28,201,000,000 tons


http://www.mot.gov.cn/zizhan/siju/guihuasi/tongjixinxi/niandubaogao/201204/t20120425_1231653.html
There are 1.5 million vehicles in the central control system. All the dangerous or important vehicles are monitored by the system nationwide.
Functionality of vehicle monitoring system

Vehicle monitoring function:
- Real-time vehicle position monitoring
- Route recording
- Over-speed alarm
- Emergency alarm
- Time-out parking alarm
- Violate route alarm
- Route planning
- Electronic fence

Road transportation management:
- Over-speed punish
- Route management
- Accident investigation
- Data analysis

Transport enterprise management:
- Track vehicles
- Schedule vehicles
- Route management
- Track cargo
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Consumer indirect benefit:
- Better traffic safety service
- Faster logistics service
- Better navigation service
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Consumer Service:
- Real-time traffic service
- Transportation service
- Traffic safety service
- Logistics search service
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Consumer Service:
1、Current status of vehicle monitoring system

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3、The future of the high precision GNSS applied in vehicle monitoring system
The Ministry of Transport of the People’s Republic of China initiated BD/GPS application demonstration project “Key transportation monitoring demonstration system” on 24/10/2011.
The demonstration project will install 80 thousand BD/GPS terminal devices to vehicles and 2 thousand BD/GPS Law enforcement terminals to foster the BD/GPS market.
**Purpose of the project:** Improve road transportation service and management

- Build the vehicle monitoring system, improve the road transportation service and management.
Transportation service and management system

- Vehicle daily operational standard monitoring system
- Data analysis system
- Cargo transportation public safety monitoring system
- Logistics information service platform
- Network road transportation law enforcement agency
- Road emergency scheduling system
- Transportation enterprise application system
Feasibility Assessment: 59 testing terminal devices were installed on the vehicles from Oct. 2011. Each device includes 4 BD/GPS modules and 1 GPS module was operated under long-term, real, and complicated environment. Based on the testing result, the BD/GPS module are available.
**Horizontal accuracy assessment**: Jan/2012, The result of the accuracy comparation testing between BD/GPS and GPS under 7 scenes at GuangZhou shows that the BD/GPS is a little better than GPS, especially in the urban canyon area.
Terminal device testing and system design are finished, the project will be finished in 2013, it will achieve the following items:

- Foster and improve the BD/GPS terminal devices in vehicle commercial market
- Improve the quality of the terminal device
- Enrich the service and functionality of the monitoring system
- Data mining the vehicle position data
Standardize and improve the Policy

• **Standardize the vehicle monitoring terminal device**
  
  JT/T 794—2011 Specification of satellite position system for road transport vehicles
  JT/T 808—2011 Specification and data format of end device satellite position system for road transport vehicles
  JT/T 809—2011 Specification of satellite position system for the monitoring system

• **Plan and Policy**

  Heavy truck left factory must install the monitoring device
  All the dangerous or important carrier vehicles should install the monitoring device by 2015
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Future Requirement: Monitoring fine-granularity driving behavior

- Satellite navigation monitoring system can prevent the accident in some extent. But the current system can only monitor the route and speed, it can not monitor the detail of the driving behavior.
Future Requirement: Navigation ability under extreme condition

Vehicle navigation terminal is widely in the market, and its main functionality is still route planning, it is almost useless under extreme weather and other emergencies.
Develop the application of high precision GNSS

- Implement high precision navigation
- Unify communication and navigation
- Merge the navigation information and the vehicle information

- Build high precision digital map
- Build land-based GNSS enhance system with high resolution, low cost, and stable running
- Build real-time information broadcasting system and vehicle monitoring system based on high precision position system.
Conclusion:

- Significant benefit from satellite navigation system used in road transportation
- The usage of BD/GPS in road transportation area will formulate the market and increase the benefit, promote the vehicle monitoring system to the public
- High precision GNSS will bring a significant change in road transportation area, and will ensure public transportation’s safety.
Thank you for your attention!

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