Application & Development of GNSS in Transportation of China

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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

- Management
- GNSS
- Safety
- Travel
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

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Application Status - Waterway

- Watercraft dispatching system
- Watercraft monitoring system
- Waterway transportation
- Waterway transportation control system
- Watercraft position report and SAR 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

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Prospect 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

Slow down!

Crash about 2km

Attention pedestrian about 100m

Parking Induction

• To arrive the destination safely
Development Bottleneck

- **Parameter**
  - Positioning accuracy: Now 5m, Future 10cm
  - Integrity: Now <10s, Future <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!