

# **The situation, strategy and vision of road traffic safety in China**



**Highway Department, Ministry of Transport, China**

**April, 2018**

# **Main Content**

**1**

**Situation and Challenge of Road Traffic Safety in China**

**2**

**Strategy and Action to Improve Road Traffic Safety**

**3**

**Vision and Research Orientation of Road Traffic Safety**

# 1) Background: leap development of transportation system

In three decades

Rapid Development of road traffic,  
freight transport, road users and  
traffic volume

Auto Society

China has completed **motorization** in a very short time



## 2) Statistics: The advent of “Auto Society”

Vehicle



**310 million** motorized vehicles, including  
**217 million** cars with a striking increase  
of **20 million per year**

Statistics

Driver



**385 million** motorized vehicle drivers,  
including **342 million** car drivers that  
still increase by **24 million per year**

Road



**4.77 million km** highway with  
**136 thousand km** motorway

## 2) Goal: The advent of “Auto Society”

China will achieve all-round well-off society in "13th Five-Year"

Expected by 2020:

100 cities with more than 1 million cars

More than 420 million drivers;

Highway mileage will increase to 150,000 km



## 2) Infrastructure : The advent of “Auto Society”



Hong Kong-Zhuhai-Macao Bridge



Balinghe Suspension Bridge



G7 Motorway in Desert



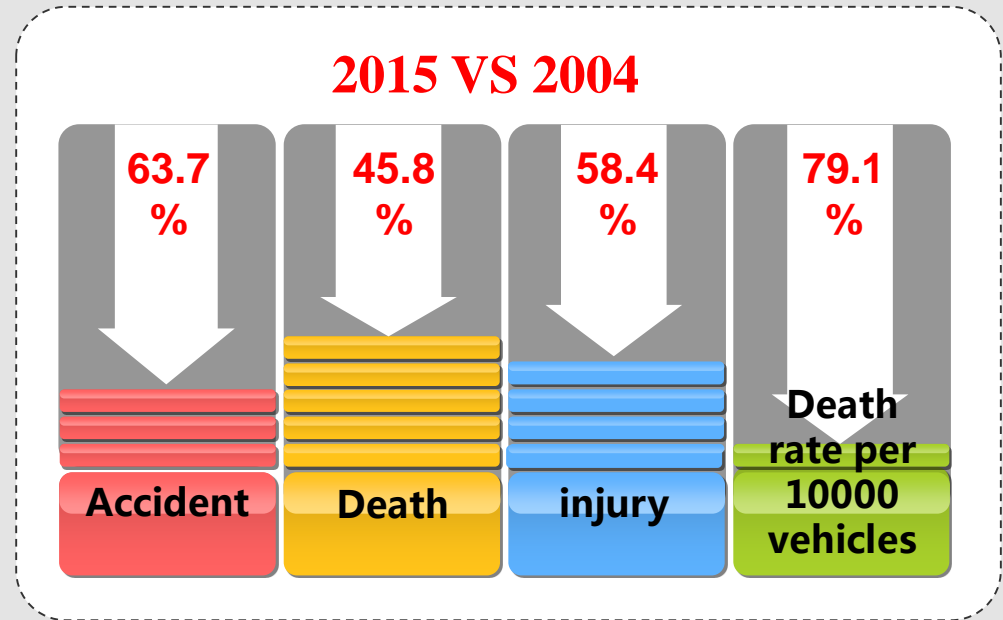
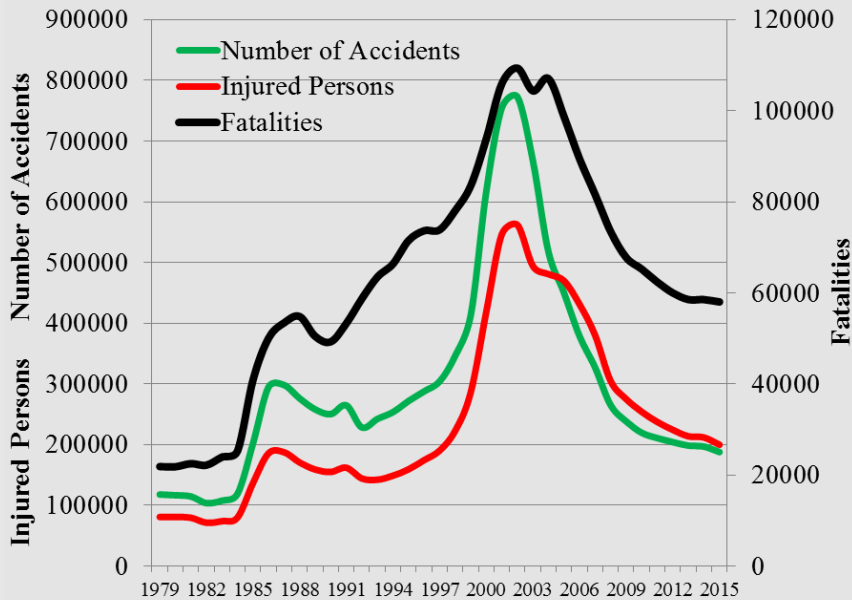
Zhongnanshan Motorway Tunnel

## 2) Infrastructure : The advent of “Auto Society”



### 3) Situations of road traffic safety

- ◆ Fatalities **significantly decreased** in recent 10 years, and will retain a sustaining decrease tendency in the future.





## 4) Challenges for road traffic safety



- Frequent traffic violation
- Publicity and education on traffic safety should be popularized in a targeted and scientific way



- Overload and low-speed truck.
- Inadequate Supervision for vehicle production & sales



- Standards & specifications implementation
- Criteria for road safety and assessment should be improved



# **Main Content**

**1**

**Situation and Challenge of Road Traffic Safety in China**

**2**

**Strategy and Action to Improve Road Traffic Safety**

**3**

**Vision and Research Orientation of Road Traffic Safety**

# 1) Improvement Strategies

Synthetical Countermeasures  
by integrating **policies**,  
**regulations**, **standards**,  
**plannings** and **mechanism**

Strategy

Tactics

**scientific and technological  
innovation**, taking concrete  
measures to lessen traffic  
risks

Effectively respond to various challenges, and  
develop continuously in a more scientific,  
reasonable and standardized way.

## 2) Main initiatives

**Strategic  
level**

### **Road Traffic Safety "13th Five-Year" (2016-2020) Plan**

**Major  
Task**

- (1) To improve the responsibility system on traffic safety
- (2) To enhance the safety awareness of traffic participants
- (3) To enhance vehicle safety performance
- (4) To enhance road infrastructure safety
- (5) To strengthen capability of law enforcement
- (6) To improve emergency management and rescue capabilities
- (7) To reinforce scientific research and capability building

### 3) R&D Activities



#### Highway Safety Enhancement Project – Phase I

China MoT had launched the HSEP to eliminate traffic risks in provincial and national trunk highways since 2004

2004  
~  
2012

**Funding**

25.3 billion RMB  
(3.8 billion USD)

**Mileage**

366,000 km



Task: upgrading highways which contain dangerous sections such as sharp turns and abrupt slopes, etc.

Average Annual severe accidents decreased **77%** and casualties decreased **72%** after HSEP implementation



### 3) R&D Activities



#### Highway Safety Enhancement Project – Phase II

State Council had decided to continue HSEP on all the rural roads since 2014



##### Main Tasks

Eliminate **hidden danger** in rural roads

Strict in construction of **safety facilities**

Road safety **upgrading**



##### Goals

Finish **hidden danger identification** in  
high risk rural roads before 2017  
> 65,000 km rural roads

Enhance all rural road **conditions** before  
2020

### 3) R&D Activities

#### 1. Technical Research Application on road safety

- 1 Roadside safety countermeasures
- 2 Safety improvement technique at cross sections
- 3 Safety countermeasures for Motorway in fog areas
- 4 Safety countermeasures for long downgrade
- 5 Safety countermeasures for highway tunnel portal areas



# 3) R&D Activities

## 2. Road safety facility design

1 Traffic sign system design for Beijing Olympic Game



2 Solar energy applications in traffic engineering facilities



3 New type highway barrier



4 Luminous road stud



# 3) R&D Activities

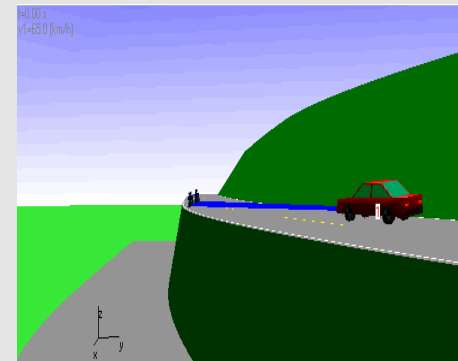
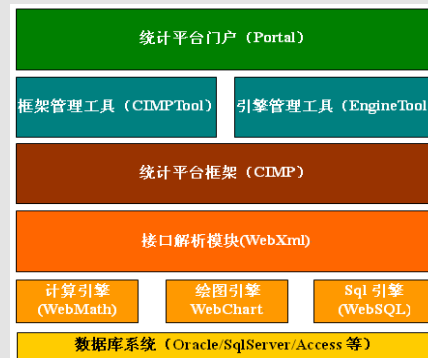
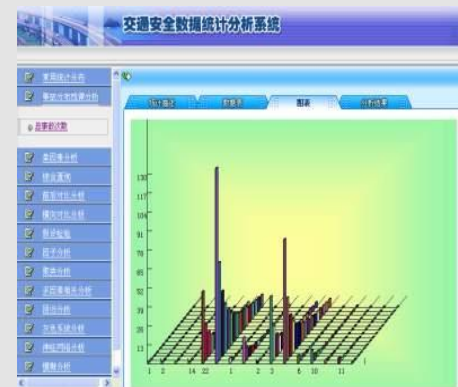
## 3. Crash analysis and traffic safety audit

1 Highway safety audit technology research and consultation

2 Highway Safety Manual (version 1.0)

3 In-depth investigation and reconstruction for crash

4 Highway safety information system

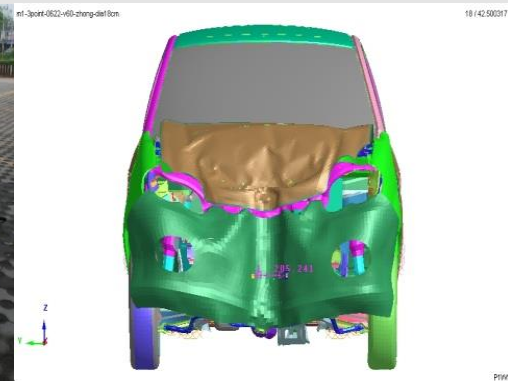


### 3) R&D Activities

#### 4. Crash analysis and traffic safety audit

5

Research and forensic identification on the vehicle safety performance, speed, and movement in road traffic accidents





# 4) Best Practice

## Barriers of Median Opening



VS



# 4) Best Practice

## Transition



VS



## 4) Best Practice

### Terminal of Barrier



VS



## 4) Best Practice

### Crash Cushion



VS





# 4) Best Practice

## Tunnel



VS





# **Main Content**

**1**

**Situation and Challenge of Road Traffic Safety in China**

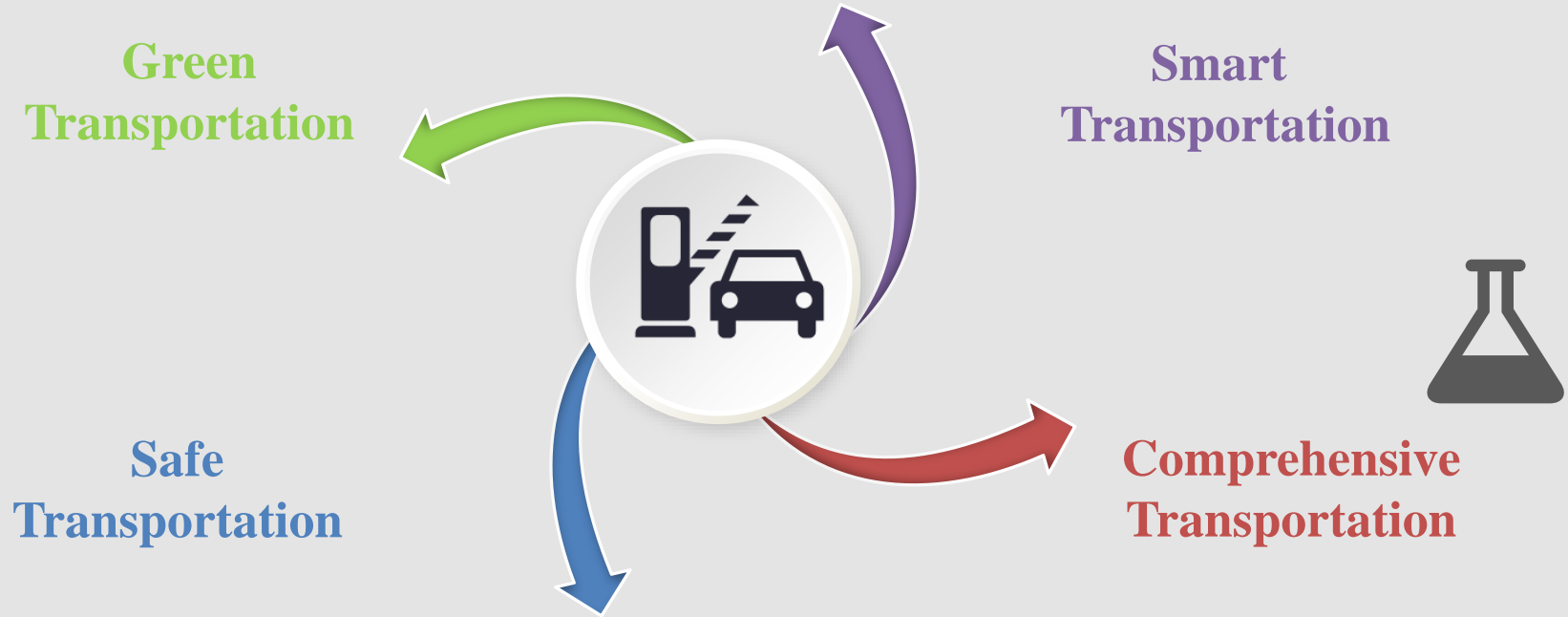
**2**

**Strategy and Action to Improve Road Traffic Safety**

**3**

**Vision and Research Orientation of Road Traffic Safety**

# 1) “Four Transportation”



**Road traffic safety** is an important part of  
safe transportation

## 2) Breakthrough points

### Road Users

Protection against  
mistake

Adjustment to  
psychological  
conditions



### Vehicles

Passive safety

Active safety

Post-accident safety



### Infrastructure

Protection capability

Inducing capability



## 4) Advanced safety technology

### Vehicle-to-X

Pass on information from a vehicle to any other entity that may affect the vehicle

Complete information interaction between drivers and the outsides



### Autonomous Driving

Capable of sensing environment and navigating without human input. Make vehicles drive more safely



## 4) Advanced safety technology

### Facility Enhancement Technology coordinated to AD vehicles

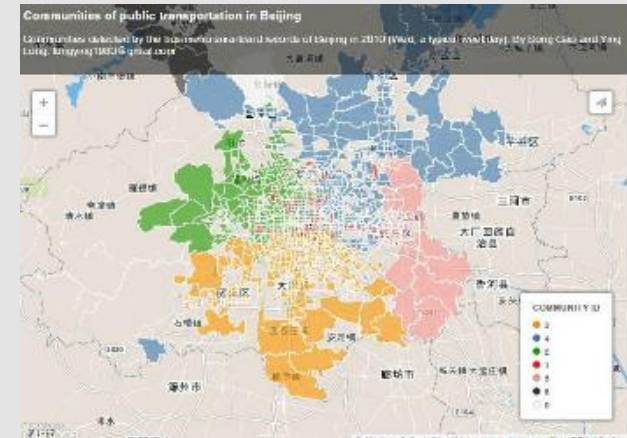
Adaptability evaluation of road  
facilities' condition

Management & control system  
with advanced analysis &  
processing technology



### Big Data Analysis

Statistical modeling technique  
based on “big data” will lead  
to meticulous management of  
road traffic safety



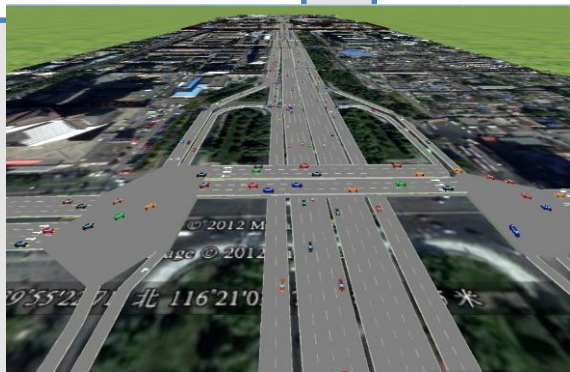


## 4) Advanced safety technology

### Based on Big Data Analysis

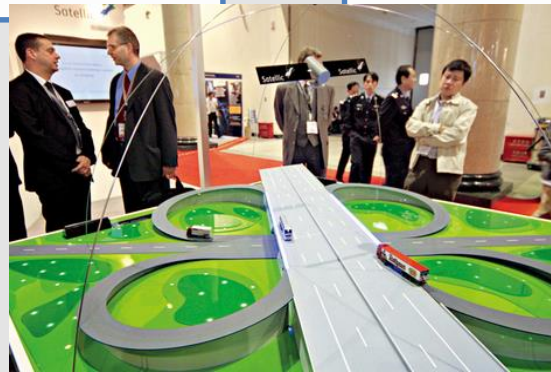
#### Traffic phenomena analysis

Analyze tendency periodicity and randomness of traffic flow, accidents and weather



#### Traffic cause investigate

Analyze relationship and interaction among traffic phenomena



#### Traffic forecast

Forecast various terms of traffic phenomena and support traffic control



**Thanks!**