公路及公路运输行政管理效能国际研讨会
International Seminar on Achieving Successful Road Transportation through Effective Management and Organization

研讨会声明和演讲
Seminar Announcements and Presentations

Technical Committee TC A.1
Performance of Transport Administrations

2018年4月25-26日
Beijing, China
The Seminar Proceedings Report has been prepared by (in alphabetical order):

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XENOPHONTOS Christos Savvas, Assistant Director, Rhode Island Department of Transportation, TC A.1 English Secretary (ORCID: 0000-0002-9627-6209)

With contributions by (in alphabetical order):

BLANCO SEGARRA, José Manuel, Chief Engineer of National Road Administration in Extremadura, Spain, TC A.1 Chair

COLEGATE, Alan, Manager Strategy of Main Roads Western Australia, TC A.1 Member

SHI, Baolin, President, China Academy of Transportation Sciences, TC A.1 Member

SPEAR Jonathan, Director of Transport Policy and Planning, Atkins Acuity, TC A.1 Workgroup Leader

Seminar Presenters and Speakers

Presenters and Speakers listed in Appendix 5

Transport Administrations need to stop defining themselves by the assets that they own, but rather by the service they deliver, the customer’s needs and expectations, and how the Transportation Administration’s actions could positively impact the quality of life of their customers.
## CONTENTS

<table>
<thead>
<tr>
<th>SEMINAR ANNOUNCEMENTS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Announcement</td>
<td>5</td>
</tr>
<tr>
<td>Second Announcement</td>
<td>11</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SEMINAR PRESENTATIONS &amp; PRESENTERS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Presentation of the Association and TC A.1</strong>&lt;br&gt;José Manuel BLANCO SEGARRA, Chair of TC A.1 Performance of Transport Administrations</td>
<td>23</td>
</tr>
<tr>
<td><strong>Integrated Transport Development in China</strong>&lt;br&gt;YU Shengying, Former Counselor of Comprehensive Planning Department, MOT, P. R. China</td>
<td>58</td>
</tr>
<tr>
<td><strong>Integrated Transport Development in Beijing-Tianjin-Hebei Region</strong>&lt;br&gt;ZHAO Yang, Director of Beijing-Tianjin-Hebei Transport Integration and Coordination Division, Beijing Municipal Commission of Transport</td>
<td>76</td>
</tr>
<tr>
<td><strong>China High Speed Railway(CHSR)- Current State and Future Prospects</strong>&lt;br&gt;LIN Zhonghong, Vice President, China Railway Economic and Planning Research Institute</td>
<td>88</td>
</tr>
<tr>
<td><strong>Path Selection of Urban Transport Development Under the Sharing Economy</strong>&lt;br&gt;WU Hongyang, Deputy Director of China Urban Sustainable Transport Research Centre (CUSTReC), CATS</td>
<td>103</td>
</tr>
<tr>
<td><strong>Comprehensive Transport Management and Innovation in Shanghai Municipality</strong>&lt;br&gt;SUN Jianping, Former Director General, Shanghai Municipal Transportation Commission/ Professor, Tongji University</td>
<td>112</td>
</tr>
<tr>
<td><strong>Asian Infrastructure Investment Bank Transport Investment Strategy</strong>&lt;br&gt;THIA Jang Ping, Principal Economist, Policy and Strategy Department of Asian Infrastructure and Investment Bank</td>
<td>120</td>
</tr>
<tr>
<td><strong>Sustainable Urban Transport in China-Lessons from International Experience</strong>&lt;br&gt;Jonathan SPEAR, Director of Transport Policy and Planning, Atkins Acuity / TC A.1</td>
<td>125</td>
</tr>
<tr>
<td><strong>Asset Management of World Bank's Investment and Financing Projects – Presentation Not Available for Publication</strong>&lt;br&gt;ZHAI Xiaoke, Senior Transport Expert, World Bank</td>
<td>141</td>
</tr>
<tr>
<td>CONTENTS</td>
<td>PAGE</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td><strong>Information Resource Integration and Sharing &amp; Practice of Big Data Application</strong></td>
<td></td>
</tr>
<tr>
<td>CAO Jiandong, Director of the Key Laboratory of Transport Industry of Big Data Application Technologies for Comprehensive Transport</td>
<td>142</td>
</tr>
<tr>
<td><strong>A Rhode TRIP—Planning for the future of mobility in Rhode Island</strong></td>
<td></td>
</tr>
<tr>
<td>Christos Savvas XENOPHONTOS, Assistant Director, Rhode Island Department of Transportation (RIDOT), USA / TC A.1</td>
<td>164</td>
</tr>
<tr>
<td><strong>One-stop Smart Travel Service</strong></td>
<td></td>
</tr>
<tr>
<td>LIU Meiyin, Vice-President, DiDi</td>
<td>177</td>
</tr>
<tr>
<td><strong>Reforming Transport Governance Structures to Deliver Better Outcomes</strong></td>
<td></td>
</tr>
<tr>
<td>Jonathan SPEAR, Director of Transport Policy and Planning, Atkins Acuity / TC A.1</td>
<td>191</td>
</tr>
<tr>
<td><strong>The National Experience of Multi-Modal Transport Authorities – The Case of Sweden</strong></td>
<td></td>
</tr>
<tr>
<td>Anna WILDT-PERSSON, Chief Strategist of Strategic Development, Swedish Transport Administration (Trafikverket)/ TC A.1</td>
<td>208</td>
</tr>
<tr>
<td><strong>The Role of Performance Management in Tracking and Improving Transport Delivery</strong></td>
<td></td>
</tr>
<tr>
<td>Alan COLEGATE, Manager Strategy of Main Roads Western Australia/ TC A.1</td>
<td>216</td>
</tr>
<tr>
<td><strong>Institutional Integrity and Implications for China</strong></td>
<td></td>
</tr>
<tr>
<td>Alexander WALCHER, Managing Director of ASFINAG BAU MANAGEMENT GRBH/ TC A.1</td>
<td>227</td>
</tr>
<tr>
<td>Michel DÉMARRE, Director General of SEFI-FNTP/ TC A.1</td>
<td></td>
</tr>
<tr>
<td><strong>Disrupting the Transport Sector through Technology and Innovation</strong></td>
<td></td>
</tr>
<tr>
<td>Anne-Severine POUPELEER, Head of division Planning and Coordination, Agency for Roads and Traffic – Flemish Government – Belgium / TC A1</td>
<td>237</td>
</tr>
<tr>
<td><strong>ITS for Transport Safety and Sustainability</strong></td>
<td></td>
</tr>
<tr>
<td>Jason CHANG, Professor of Taiwan University</td>
<td>261</td>
</tr>
<tr>
<td><strong>Seminar Conclusions</strong></td>
<td></td>
</tr>
<tr>
<td>José Manuel BLANCO SEGARRA, Chair of TC A.1 Performance of Transport Administrations</td>
<td>278</td>
</tr>
</tbody>
</table>
First Announcement

International Seminar on Achieving Successful Road Transportation through Effective Management and Organisation

Beijing, China
Wednesday 25 – Thursday 26 April 2018
Technical visit on Friday 27 April 2018
Organised in cooperation with:

China Academy of Transportation Sciences, MOT, PRC
Technical Committee A.1 Performance of Transport Administrations

World Road Association – PIARC
SEMINAR OVERVIEW

The World Road Association in conjunction with the China Academy of Transportation Sciences (CATS), are pleased to announce an International Seminar on Achieving Successful Road Transportation through Effective Management and Organisation.

PIARC Technical Committee A.1 – Performance of Transport Administrations – extends a sincere invitation to you to participate in the upcoming seminar. The primary objective of the seminar is to exchange information on the establishment of tools to measure the performance of transport administrations and best practice for good governance.

The Seminar is open to members of World Road Association-PIARC who are interested in gaining and sharing knowledge on performance measurement and best practice in governance.

SEMINAR TOPICS

The seminar provides an opportunity for speakers to address both technical and management issues broadly based around but not limited to the following:

- Performance management frameworks
- Evolution and transformation of transport administrations
- Fighting corruption in the road and transport sectors, developing a culture of transparency and accountability
- Performance of road and transport administrations: Lessons learnt and shared
- Joint transport sector experience
- Change and disruption in urban transport challenges and solutions
- Sharing economy in transport

SEMINAR VENUE

The seminar will take place from Wednesday 25th to Thursday 26th April 2018 at Beijing Friendship Hotel in the capital of China, Beijing. The Friday 27th April features a technical visit to be arranged around Beijing.


ACCOMMODATION

Lodging information will be provided in the second announcement which will be sent out four months before the seminar.

LANGUAGES

The official language of the seminar will be English and Chinese with simultaneous translation.
PRELIMINARY PROGRAMME

Seminar contents will be organised according to the following preliminary program:

• Day 1 (25th April) - China Perspectives on Transport and Mobility
  • Opening Ceremony and Welcome Remarks
  • Presentation by PIARC
  • Theme 1 (AM) - The Transport Challenge in China- Current State and Future Prospects
  • Presentations
  • Q & A
  Lunch
  • Theme 2 (PM) - Achieving Successful Outcomes through Transport Sector Planning and Reform
  • Presentations
  • Q & A
  • Conclusions from Day 1
  Dinner

• Day 2 (26th April) - International Perspectives and Transferable Lessons
  • Introduction to the Activities of Current Technical Committee A.1
  • Theme 3 (AM) - International Perspectives on Transport Governance
  • Presentations
  • Q & A
  Lunch
  • Theme 4 (PM) - China & International Rolling Panels on Joint Transport Sector Experience
  • Summing Up of Key Conclusions from Seminar
  • Closing Ceremony
  Dinner

• Day 3 (27th April) - Technical Visit
DELEGATES TO THE SEMINAR

The organizing committee anticipates that there will be good attendance at the seminar with representation from:

- Members of the World Road Association Technical Committees and invited international experts, speakers and representatives from Africa, Asia, the Americas, Europe and China, etc.
- Ministries, organizations and road authorities from across China and international.
- Specialists and scholars from Chinese universities that have a special interest in performance management and good governance.
- Staff members of China Academy of Transportation Sciences.

REGISTRATION

Form and fees will be published in the second Announcement four months before the seminar.

TRAVEL INFORMATION

- Visa Requirements/Guidelines for obtaining visa for China.
  All the nationalities need to obtain a visa for China prior to travel. Applicants are advised to apply early to avoid last minute delays.

  Beijing is generally served by Beijing Capital International Airport, for both domestic and foreign flights.

MEMBERS OF THE ORGANISING COMMITTEE

World Road Association - PIARC

China Academy of Transportation Sciences
SHI Baolin
President of China Academy of Transportation Sciences
LIU Si
Research Associate of China Academy of Transportation Sciences

Technical Committee A.1 Performance of Transport Administrations
BLANCO SEGARRA José Manuel
Chair of Technical Committee A.1
XENOPHONTOS Christos S.
English-speaking Secretary of Technical Committee A.1

DEMARRE Michel
French-speaking Secretary of Technical Committee A.1

SPEAR Jonathan
Director at Atkins Acuity

If you have any questions in regards to this seminar, please address them to the following email:

CONTACT POINT
LIU Si
Research Associate of China Academy of Transportation Sciences
E-mail: 18811051700@163.com
Second Announcement

International Seminar on Achieving Successful Road Transportation through Effective Management and Organisation

Beijing Friendship Hotel
Beijing, China
Wednesday 25 – Thursday 26 April 2018
Technical visit on Friday 27 April 2018
Organised in cooperation with:

China Academy of Transportation Sciences, MOT, P.R. China
Technical Committee A.1 Performance of Transport Administrations
World Road Association – PIARC

Supported by:

Ministry of Transport of P.R. China
A SPECIAL INVITATION

On behalf of the Organising Committee I extend a warm invitation to join us in Beijing and attend the 2018 International Seminar on Achieving Successful Road Transportation through Effective Management and Organisation.

The China Academy of Transportation Sciences (CATS) in conjunction with the World Road Association, are hosting this international seminar at the Beijing Friendship Hotel, Beijing, from the 25th to the 27th of April 2018.

Our primary objective for the seminar is to exchange information on the establishment of tools to measure the performance of transport administrations and best practice for good governance. To that extent we have created a seminar program with strong emphasis on current practical experiences from across the world. The seminar format will feature presentations by national and international speakers with facilitated panel discussions along with daily plenary conclusions and resolutions on the 25th and 26th and a technical visit around Beijing on the 27th of April 2018.

The seminar will bring together road officials from all tiers of government, academia and professionals from both the public and private sector, to assist in supporting good governance and exploring the changing structures and approaches of road and transport agencies.

We look forward to meeting you in Beijing during the 25-27 April 2018 International seminar.

President
China Academy of Transportation Sciences
SEMINAR OVERVIEW

The World Road Association in conjunction with the China Academy of Transportation Sciences (CATS), are pleased to announce an International Seminar on Achieving Successful Road Transportation through Effective Management and Organisation.

The primary objective of the seminar is to exchange information on the establishment of tools to measure the performance of transport administrations and best practice for good governance.

The seminar is open to members of the international road and transport community who are interested in gaining and sharing knowledge on Performance measurement and best practice in governance.

The seminar is expected to be attended by around 100 delegates. Please note that the registration will be closed when the number is full and therefore early registration is strongly encouraged.

SEMINAR TOPIC

The seminar provides an opportunity for speakers to address both technical and management issues broadly based around but not limited to the following:

- Performance management frameworks
- Evolution and transformation of transport administrations
- Fighting corruption in the road and transport sectors, developing a culture of transparency and accountability
- Performance of road and transport administrations: Lessons learnt and shared
- Joint transport sector experience
- Change and disruption in urban transport challenges and solutions
- Sharing economy in transport

LANGUAGES

The official languages of the seminar will be English and Chinese with simultaneous translation in each language.

DELEGATES TO THE SEMINAR

The organizing committee anticipates that there will be good attendance at the seminar with representation from:

- Members of the World Road Association Technical Committees and invited international experts, speakers and representatives from Africa, Asia, the Americas, Europe and China, etc.
- Ministries, organizations and road authorities from across China and international.
- Specialists and scholars from Chinese universities that have a special interest in performance management and good governance.
- Staff members of China Academy of Transportation Sciences.
PIARC SPECIAL FUND
The PIARC Special Fund can cover up to 100% of travel expenses or up to 100% of the accommodation costs of participants from developing countries (lower middle income and low income countries). It can cover the cost of one participant per PIARC member subject to the agreement of the First Delegate. Requests for Special Fund assistance should be made by the First Delegate to the PIARC General Secretariat e-mail: info@piarc.org

PRELIMINARY PROGRAMME
Seminar contents will be organised according to the following preliminary program:

• **Day 1 (25th April) - China Perspectives on Transport and Mobility**
  **Morning session**
  • Opening Ceremony and Welcome Remarks
  • Presentation by WRA
  • Theme 1 - The Transport Challenge in China- Current State and Future Prospects
    Presentation①: Development of China's Transport
    Presentation②: Multi-mode Urban Passenger Transport System in Beijing-Tianjin-Hebei Region
    Presentation③: G-series High-Speed Train in China
    Presentation④: Development of Urban Transportation in the Context of Shared Economy
  • Q & A
  **Lunch**
  **Afternoon session**
  • Theme 2 - Achieving Successful Outcomes through Transport Sector Planning and Reform
    Presentation①: The Regional Experience of Integrated Transportation Management and Innovation( The Case of Shanghai/Shenzhen)
    Presentation②: The Application of Big Data in Integrated Transportation
    Presentation③: The Practice for Intelligent Shared Travel
    Presentation④: Financial Innovation for the Development of Green Transportation
    Presentation⑤: Transportation Infrastructure Investment and Financing
  • Q & A
  • Conclusions from Day 1
  **Dinner**
• **Day 2 (26th April) - International Perspectives and Transferable Lessons**

**Morning session**
- Introduction to the Activities of Current Technical Committee A.1
- Theme 3 - International Perspectives on Transport Governance
  - Presentation①: Reforming Transport Governance Structures to Deliver Better Outcomes
  - Presentation②: The National Experience of Multi-Modal Transport Authorities – The Case of Sweden
  - Presentation③: The Role of Performance Management in Tracking and Improving Transport Delivery
  - Presentation④: Promoting Institutional Integrity and Implications for China
  - Presentation⑤: Disrupting the Transport Sector through Technology and Innovation
- Q & A

**Lunch**

**Afternoon session**
- Theme 4 - China & International Rolling Panels on Joint Transport Sector Experience
  - Topic①: To what extent are reforms to institutional structures and processes a vital component to planning and delivering successful transport strategies and programmes in China?
  - Topic②: Is technology the “magic bullet” to solving problems of congestion, poor air quality and connectivity in China’s cities?
  - Topic③: What additional transport policies and investments, which are not current priorities, should be promoted in future national, provincial and city plans in China to achieve sustainable economic development?
- Summing Up of Key Conclusions from Seminar
- Closing Ceremony

**Dinner**

• **Day 3 (27th April) - Technical Visit**
- Transportation Operations Coordination Center (TOCC) in Beijing
- Electronic fence for Shared bikes
- City Tour
REGISTRATION & FEES

There is no fee for the delegates to attend the seminar; however, there is a mandatory registration that must be submitted in time to allow for the required documentation to be processed ahead of the seminar.

To attend the international seminar, all participants/delegates are required to fill the registration form (please see Attachment 1) and submit by e-mail to the Seminar Secretariat at Cats1960@163.com no later than the 2nd of February 2018.

Registration to the seminar includes access to the full two days of proceedings, seminar lunches and dinners, and associated technical visit.

Each person attending must submit a separate registration form.

VISA

A China Visa is needed by all foreign passport holders upon entry into China with very few exceptions.

Please note that it is your responsibility to have the right visa for your visit to Beijing. The Seminar Secretariat will assist by providing invitation letters required for visa purposes. Your country may have specific requirements and the following is provided for your information.

If you are interested in participating in the seminar, please submit the filled-in registration form found in Attachment 1 by e-mail to the Seminar Secretariat at Cats1960@163.com no later than February 2nd, 2018, then please wait for the confirmation letter access to the seminar from the Seminar Secretariat before proceeding with obtaining your visa. Please do take into consideration the Chinese New Year Spring Festival from the 15th-21st of February in your plans. Registrations will be processed on a first come first serve basis. With the seminar invitation letter enclosed, you can proceed with visa next.
◆ SEMINAR VENUE AND ACCOMMODATION

The seminar will take place from Wednesday 25th to Thursday 26th April 2018 at Beijing Friendship Hotel in the capital of China, Beijing. The 27th features a technical visit to be arranged around Beijing.

Beijing Friendship Hotel, this world-class facility, renowned for its traditional Chinese garden style, features classic Chinese architectural elegance and presents most pleasurable views, has successfully staged some of the world’s most prestigious and complex events.

Delegates who receive the seminar invitation letter, please find the attachment 2 to see the Hotel Accommodation Form, fill the form then send the completed form by email to smd@bjfriendshiphotel.com for reservation.

More details on the Beijing Friendship Hotel website:


TRAVEL INFORMATION

• Access:

Beijing is generally served by Beijing Capital International Airport, for both domestic and foreign flights. Beijing Capital International Airport (北京首都国际机场 Bēijīng Shǒudū Guójì Jīchǎng) in suburban district Shunyi (approximately 26 km to the northeast of the central districts), is the world’s second-busiest (as of 2013 data) and has three terminals. Travel between Terminals 1 and 2 is via a long corridor with travelators. A free shuttle bus runs between Terminal 2 and 3.

A taxi from the airport should cost ¥70-120. Please do join the regular taxi queue and certainly avoid the various touts.

The Airport Express train runs in a one-way loop from T3 to T2, then into the city and Sanyuanqiao Station (connected to Line 10) and Dongzhimen Station (Lines 2, 13). One-way fare is ¥25 and the trip takes about 20 minutes from T2 to Dongzhimen Station, about 30 minutes from T3. Although the last Airport Express train leaves airport to city at around 23:10, the subway lines normally stop operating before 23:00 on weeknights. The Airport Express trains do not accept Credit / Debit cards [Nov 2017], make sure you have cash before your ride.
A slightly cheaper way to get to the city centre is to take the airport shuttle (机场巴士 Jīchǎng Bāshì). Buses for each route leave every 10-30 minutes. There are several lines running to different locations throughout Beijing. ¥16 one-way.

Sources: http://wikitravel.org/en/Beijing

- **About Beijing:**

  Beijing (北京 Běijīng) is the capital of the People's Republic of China, with a population of 21.5 million people. It is the political, educational and cultural centre of the country and as such it is rich in historical sites and important government and cultural institutions.

  As an ever-changing mega-city rich in history and civilization, Beijing also exemplifies its global influence in sport, art, business & economy, innovation & technology and of course, transportation. It is a major hub for the national highway, expressway, railway, and high-speed rail networks. The Beijing Capital International Airport has been the second busiest in the world by passenger traffic since 2010, and as of 2016, the city's subway network is one of the busiest in the world.

  Beijing is marked by its flatness and arid climate. There are only three hills to be found in the city limits (in Jingshan Park to the north of Forbidden City) and mountains surround the capital on three sides. Like the configuration of the Forbidden City, Beijing has concentric "ring roads", which are actually rectangular, that go around the metropolis and serve as good reference points as one attempts to move about the city. Beyond the ring roads are the most-visited portions of the Great Wall of China, which witnesses visitors the world over and Beijing serves as a good headquarters for those who wish to gaze upon one of mankind's more memorable and lasting structures.

Sources: http://wikitravel.org/en/Beijing

- **Climate**

  Beijing's climate is a dry, monsoon-influenced humid continental climate, with hot, humid summers and cold, dry winters. Autumn, like spring, sees little rain but is short. Spring is generally accompanied by rapidly warming but in dry conditions.

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<th>Mar</th>
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Attachment 1

Seminar Registration Form

Please complete this registration form and submit by e-mail to the Seminar Secretariat, Ms. LIU Si, at Cats1960@163.com no later than the 2\textsuperscript{nd} of February 2018.

<table>
<thead>
<tr>
<th>Mr. ☐</th>
<th>Mrs. ☐</th>
<th>Ms. ☐</th>
<th>Dr. ☐</th>
<th>Other: .................................................................</th>
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<tbody>
<tr>
<td>Surname</td>
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<tr>
<td>First Name</td>
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<td>Special requirement - dietary</td>
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Copy of passport data information page Please attach it to your email

Brief Work Resume Please attach it to your email

Yes, I will: [please tick appropriate box(es)]

☐ participate in the seminar
☐ attend the dinner on Wednesday 25 April
☐ attend the dinner on Thursday 26 April
☐ attend the technical visit on Friday 27 April

☐ Yes, I will be accompanied by: ........................................... (relationship)

First Name: ........................................... Last Name: ...........................................

☐ Yes, my accompanying person will participate in the technical visit

☐ Special requirements - dietary: ............................................................... 

☐ Special requirements - mobility: ............................................................

**PRIVACY**

I agree that particulars stated in this form can be displayed in conference documentation:

YES: ☐ NO: ☐
Attachment 2
Hotel Accommodation Form

Achieving Successful Road Transportation through Effective Management and Organisation
公路及公路运输行政管理效能国际研讨会

1. Names:
2. Institution:
3. Nationality:
4. Contact Address:
   Phone:
   Fax:
   E-mail:
   Passport number:

5. Category

<table>
<thead>
<tr>
<th>Hotel</th>
<th>Room type</th>
<th>Room rate (RMB)</th>
<th>Check-in date</th>
<th>Check-out date</th>
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<tbody>
<tr>
<td>Deluxe Suite room in Building.1(5 star)</td>
<td>King size bed</td>
<td>980</td>
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<td></td>
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<tr>
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<td>King size bed</td>
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<td>Standard room in Building.4(4 star)</td>
<td>Twin or double</td>
<td>550</td>
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<tr>
<td>Standard room in Building.2(4 star)</td>
<td>Twin or double</td>
<td>480</td>
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</table>

- The above rate includes one breakfast, free of service charge.
- The above rate for Building 1 has complementary for swimming and gyms.
- Free use of broadband in the guest room.

Your request in the above format through email may be sent to:

smd@bjfriendshiphotel.com

Many thanks for your reservation.

Sales Department

Beijing Friendship Hotel
THE ORGANISING COMMITTEE

World Road Association - PIARC

China Academy of Transportation Sciences
SHI Baolin, President of China Academy of Transportation Sciences (CATS)
LI Zhongkui, Director of China Academy of Transportation Sciences (CATS)
WANG Yutian, Director of China Academy of Transportation Sciences (CATS)
LIU Leilei, Research Associate of China Academy of Transportation Sciences (CATS)
LIU Si, Research Assistant of China Academy of Transportation Sciences (CATS)

Technical Committee A.1 Performance of Transport Administrations
BLANCO SEGARRA José Manuel, Chair of Technical Committee A.1
XENOPHONTOS Christos Savvas, English-speaking Secretary of Technical Committee A.1
DEMARRE Michel, French-speaking Secretary of Technical Committee A.1
SPEAR Jonathan, Director at Atkins Acuity

If you have any questions in regards to this seminar, please address them to the Seminar Secretariat Ms. LIU Si, Research Assistant of China Academy of Transportation Sciences at the following email: Cats1960@163.com
What is PIARC
Addressing members’ expectations

• Non-political, non-profit association established in 1909
• Aim: promote international cooperation on issues related to roads and road transport
• Consultative Status on the Economical and Social Council of United Nations
• With its broad membership and geographic diversity, the vision of the World Road Association is to become: “The world leader in the exchange of knowledge on roads and road transport policy and practices within the context of integrated, sustainable transport.”

• Recognised for the quality of our outputs
PIARC’s Four key missions

• Be a leading international forum for analysis and discussion of the full spectrum of transport issues related to roads and related transport;
• Identify, develop, and disseminate best practice and give better access to international information;
• Consider within its activities the needs of developing countries and countries in transition fully; and
• Design, produce, and promote efficient tools for decision making on matters related to roads and related transport.

• The Association mobilizes the expertise of its members through operations guided by a 4-year Strategic Plan

Extensive membership base

• 121 National governments are members of the Association

• Members from a total of 140 countries
  • Regional authorities
  • Collective members – public or private
  • Individual members

• More than 1 200 experts are currently mobilised in our working groups
7 of the 17 United Nations SDG (Sustainable Development Goals) are related to Roads.

Knowledge exchange: The core of PIARC

- PIARC mobilises international road and transport experts through more than 20 groups:
  - Ad-hoc dialogue among peers
  - Network building
  - Joint work towards commonly-agreed deliverables
- These deliverables are widely accessible:
  - Reports
  - Seminars or workshops
  - Online manuals
  - Software and tools
- PIARC Congresses are world-class focus points for:
  - Dissemination of these deliverables
  - Further discussions
PIARC reports

Downloadable pdf files
Available for free at www.piarc.org

• Cycle 2012-2015:
  • 40 technical reports were produced by the Technical Committees
• Cycle 2016-2017: 54 new reports

An extensive website:
www.piarc.org

Services available:

• Knowledge Base
• Virtual Library
• Online road dictionary
• Congress proceedings
• Detailed information on the Association and its activities
• Etc.
Online road dictionary

- Technical Dictionary of Road Terms
- Mainly: English, French, German, Portuguese, and Spanish
- Plus 32 other languages
- 8th edition
- Online, free of charge

International Seminars

- Exchange of knowledge with and in low- and middle-income countries
- 26 seminars and 7 workshops organised during the 2012-2015 cycle
- Presentations are available online via the PIARC Website
- More than 30 seminars and workshops planned during the 2016-2019 cycle
**Routes / Roads**

- Quarterly magazine
- Articles cover emerging road and road transport issues
- English, French and Spanish
- Print and online distribution
- 5,700 copies, readership in more than 140 countries
- Electronic version: routesroadsmag.piarc.org

**Online Manuals**

**Easy access to knowledge**

- Four online manuals have been developed by the Association:
  - Road Safety
  - Road Network Operations and ITS
  - Road Tunnels
  - Road Asset Management
- **Two more are planned:** Winter Road Service and Disaster Management

- Comprehensive, state-of-the-art international references
- A “living” tool that can assist all countries meet their objectives
- **Easy and attractive to use:**
  - Free of charge
  - Key principles for each of the topics are included and discussed in the sections
  - Case studies and links to detailed technical material and other references
  - Can be downloaded and printed in chapters
Software

- **HDM-4**
  - The primary tool for the analysis, planning, management and appraisal of road maintenance, improvements and investment decisions
  - Developed with numerous stakeholders
  - Distributed through HDMGlobal
  - [www.hdmglobal.com/](http://www.hdmglobal.com/)

- **DG-QRAM**
  - Tool for managing dangerous goods transport in tunnels
  - Distributed by PIARC

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International Winter Road Congresses

- Maintenance and roads operations in winter
- 1969 – 1st Congress in Berchtesgaden, Germany
- A congress every four years
  - Seefeld 1994
  - Luleå 1998
  - Sapporo 2002
  - Turin-Sestrières 2006
  - Québec 2010
  - Andorra 2014
  - Gdańsk 2018
  - Calgary 2022
World Road Congresses

- 1908 – 1st World Road Congress in Paris, France
- A congress every four years
- Share knowledge and experiences on roads and road transportation

- Brussels 1987
- Marrakech 1991
- Montréal 1995
- Kuala Lumpur 1999
- Durban 2003
- Paris 2007
- Mexico City 2011
- Seoul 2015
- Abu Dhabi 2019

PIARC and Low and middle income countries

- One of our key missions is:
  - Consider within our activities the needs of developing countries and countries in transition fully
- This is part of our “DNA”
- Several processes are implemented:
  - Include possible specific needs of low and middle income countries (LMICs) in the terms of reference of the Association (Strategic Plan)
  - Involve experts from LMICs in the activities of the Technical Committees
  - Organise International PIARC seminars in low and middle income countries (LMICs)
  - Establish regional working groups
- Budget support is available from PIARC
Executive Committee
2017-2020

President
Claude Van ROOTEN (Belgium)

Past President
Oscar de BUEN (Mexico)

Vice Presidents
Cheick Oumar Diallo (Mali)
Shigeru Kikukawa (Japan)
Miguel Ángel Salvia (Argentina)

Members
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National Committees’ Representative
Saverio Palchetti (Italy)

Objectives:
• Facilitate national exchanges on roads and road transport
• Promote the work of PIARC
• Liaise with national experts and issues
40 countries
(Oct. 2016)
Our Expert structures

- **Technical Committees**
  - Constituted for the full four years

- «**Task Forces**»:
  - Are allowed more flexibility; 2-year activity cycles; cover new topics and analyze their future relevance for roads; reasonably small groups

- «**Special Projects**»:
  - Outsourced by the SG; development of high-level, short documents that are not within the near-term capacity of the Technical Committees or Task Forces to complete

- «**Regional Task Forces**»:
  - Address topics of particular interest to certain regions, especially those with many developing countries

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Strategic Plan for 2016-2019

- The Association’s activities are guided by a **4-year Strategic Plan**

- The new Plan covers the period 2016-2019

- It has been prepared through **an in-depth process** under the leadership of the Strategic Planning Commission

- It was **formally approved** by the Association’s Council in Seoul in November 2015
2016-2019 Themes

- 5 Strategic Themes
  - A. Management and Finance
  - B. Access and Mobility
  - C. Safety
  - D. Infrastructure
  - E. Climate Change, Environment and Disasters
- Continuation of several lines of traditional work
- With an elevation of environment-related issues

- 18 Technical Committees and 4 Task Forces
  - Including the Terminology Committee
  - In each case the Strategic Plan establishes functions, topics to be addressed and expected results

2016 – 2019 Strategic plan

<table>
<thead>
<tr>
<th>A. Management and finance</th>
<th>B. Access and mobility</th>
<th>C. Safety</th>
<th>D. Infrastructure</th>
<th>E. CC-Environment – Disasters</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.1 Performance of transport administrations</td>
<td>B.1 Road Network Operations / ITS</td>
<td>C.1 National road safety policies and programs</td>
<td>D.1 Asset management</td>
<td>E.1 Adaptation strategies / Resilience</td>
</tr>
<tr>
<td>A.2 Road transport system economics and social development</td>
<td>B.2 Winter services</td>
<td>C.2 Design and operations of safer road infrastructure</td>
<td>D.2 Pavements</td>
<td>E.2 Environment considerations in road projects and operations</td>
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<tr>
<td>A.3 Risk management</td>
<td>B.3 Sustainable multimodality in urban areas</td>
<td>D.3 Bridges</td>
<td>D.4 Rural roads and earthworks</td>
<td>E.3 Disaster management</td>
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<td></td>
<td>B.4 Freight</td>
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<td>D.5 Road tunnels operations</td>
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<td>A.1 Innovative financing</td>
<td>B.1 Road design &amp; infrastructure for innovative solutions</td>
<td>C.1 Infrastructure security</td>
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<tr>
<td>A.2 Coordinating National and Subnational adm.</td>
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Strategic Theme Coordinators and Technical Advisors

<table>
<thead>
<tr>
<th>A. Management and finance</th>
<th>B. Access and mobility</th>
<th>C. Safety</th>
<th>D. Infrastructure</th>
<th>E. Climate Change Environment &amp; Disasters</th>
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<tr>
<td>Coordinator: Mr Ernesto BARRERA</td>
<td>Coordinator: Mr Shigeru KIKUKAWA</td>
<td>Coordinator: Mr Jean-François CORTÉ</td>
<td>Coordinator: Mr Oscar GUTIÉRREZ</td>
<td>Coordinator: Mr Roberto AGUERREBERE</td>
</tr>
<tr>
<td>Technical Advisor: Mr Hyunseok KIM</td>
<td>Technical Advisor: Mr Yuya NAMIKI</td>
<td>Technical Advisor: Ms Kirsten GRAF LANDMANN</td>
<td>Technical Director: Ms Claudine TREMBLAY</td>
<td>Technical Advisor: Ms Verónica ARIAS ESPEJEL</td>
</tr>
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</table>

Secretary General
Mr Patrick MALLEJACQ

Technical Director
Mr Miguel CASO FLÓREZ

PIARC CONGRESSES

• Save the dates!

• 16th International Winter Road Congress
  • Calgary, Canada
  • 8-11 February 2022

• 26th World Road Congress
  • Abu Dhabi, United Arab Emirates
  • 6 – 10 October 2019
Thank you for your attention

on behalf of:
www.piarc.org
info@piarc.org

Patrick Malléjacq
PIARC General Secretary
patrick.mallejacq@piarc.org

TC A1 OVERVIEW

Now, let's talk about

PIARC TC A1
« Performance of Transport Administrations »
and its products, speakers and attendees in the Seminar
Main Goals of Strategic Theme A (ST A) « Management and Finance » entrust to TC A1, TC A2 and TC A3 are:

- Development of policies and strategies that result in transport administrations that perform well, do the measurement of the performance, and incorporate innovative financing mechanisms to meet the ever changing needs of the road transportation community.

- It is intended to provide examples of good governance, performance management and evaluation methods.

The three Issues of the current TC A. 1 are:

- Framework on measuring effectiveness and efficiency of transport administrations (« Measuring the Performance ») TC A1 WG1

TC A1 WG 1 Co-Leaders:

Ilaria Coppa (Italy)
(Manager of Operation Directorate, ANAS)
(Due to last minute problems is not Attendee in the Seminar) (Host in future TCA1 meeting)

Francine Shaw-Whitson (USA)
(Team Leader of Transportation Performance Management Programs, FHWA)
TC A1 OVERVIEW

• Evaluating the transformation of transport administration
  (« The Challenge of Change ») TC A1 WG2

TC A1 WG 2 Co-Leaders:
Jonathan Spear (Singapore)
  (Director, Atkins Acuity)
  (Speaker in the Seminar)
Alexander Walcher (Austria)
  (Managing Director, ASFINAG BAU MANAGEMENT)
  (Speaker in the Seminar)

TC A1 OVERVIEW

• Promotion of a culture of transparency and accountability TC A1 WG3

TC A1 WG 3 Co-Leaders:
Michel Démarre (France)
  (General-Director, SEFI/FNTP
  SEFI: French Association of International Contractors)
  (Speaker in the Seminar)
Logashri Sewnarain (South Africa)
  (Previous Regional Manager, SANRAL – Eastern Region) South Africa
  (SMEC SA: Functional General Manager Roads and Highways ) (Attendee in the Seminar)
TC A1 OVERVIEW

Three Secretaries (English, French and Spanish languages):

Christos Xenophontos (USA)
(Asstant Director, RIDOT « Rhode Island Department of Transportation »)
(Vice-Chair of AASHTO COPM « Commitee on Performance Based Management »)
(Speaker in the Seminar)
(Host TC A1 in April 2017)
Michel Démarre (France)
(General-Director, SEFI/FNTP) (Speaker in the Seminar)
Sergio Vargas (Chile) (engineer in Dirección General de Vialidad) (Attendee in the Seminar)

Shi Baolin (P.R. China)
(President, China Academy of Transportation Sciences, CATS)
(Host & speaker in the Seminar)
LIU Si (PR China)
(Research Assistant, CATS)
(Host & attendee in the Seminar)
TC A1 OVERVIEW

Anna Wildt-Persson (Sweden)
(Chief Strategist, Trafikverket, Swedish Transport Administration)
(Speaker in the Seminar)
(Host TC A1 in Sept 2017)

Alan Colegate (Australia)
(Manager Strategy, Main Roads, Western Australia)
(Speaker in the Seminar)

Anne-Séverine Poupeleer (Belgium)
(Head of Division of Planning & Coordination, Agency for Roads and Traffic, MOW-AWV in Flanders / Belgium)
(Speaker in the Seminar)

Niels Tørsøløv (Denmark)
(Director of Operations, Vejdirektoratet, Danish Road Directorate)
(Attendee in the Seminar)
(Speaker TC A1 in September 2017)
TC A1 OVERVIEW

Nataliya Forsyuk (Ukraine)
(CoST Ukraine country manager)
(CoST: Infrastructure Sector Transparency Initiative)

(Speaker in the Seminar)
(Host next Seminar to be held in Kiev with the collaboration of Kievavtodor, Kiev city Road Agency which is a new member of PIARC)

Oleksander Gustieliev (Ukraine),
Director of the mentioned Kievavtodor,
Kiev city Road Agency is attendee in the Seminar

Meeting of PIARC TC A1 in November 2016 in Madrid (Spain)
TC A1 OVERVIEW

Meeting of PIARC TC A1 in September 2017 in Copenhagen (Denmark) and Malmö (Sweden)

Coordinator of Strategic Theme A (ST A):
Ernesto Barrera Fajardo (Chile)
(Director of Maintenance, Dirección General de Vialidad, Chile General-Directorate for Roads)
(is attending PIARC SPC, Strategic Planning Commission in Mexico)

Succesor of Alberto Bull Simpfendorfer (Chile)
(sadly passed away in 2017)
TC A1 OVERVIEW

The TC was created in 1996 and called « Performance of Road Administrations » up to the end of 2007 and « Good Governance of Road Administrations » up to the end of 2011.

The current work of TC A. 1 is based on the former TC 1.1 (2012-2015), chaired by Brendan Nugent (Australia).

TC A1 OVERVIEW

The TC 1.1 Issues were three:

• Evolution of structures and missions of the administrations (Trends and outcomes of multi-modal governance in the road and transport sector)

• Assessment of performance of the administration (The importance of good performance information)

• Good governance and anti-corruption measures (influence of media in creating perceptions related to institutional integrity) (application of WRA Integrity Toolkit)

Products since creation of TC in 1996:


“TRENDS AND OUTCOMES OF MULTI-MODAL GOVERNENCE IN THE ROAD AND TRANSPORT SECTOR”
(57 pages plus Appendix and a Toolkit for Multi-Modal Collaboration)

Among the authors were the following Speakers:

Alexander Walcher (Joint Chair of TC 1.1 WG1)
Jonathan Spear (Joint Chair of TC 1.1 WG1)
Alan Colegate (Joint Chair of TC 1.1 WG2)
In brief: A particular trend – since the 1990s – has been the creation of large multi-modal transport organisations that are responsible for several modes of transport. The former road agencies are integrated in the new organisations.

The rationale provided for reform is not always supported by clear evidence or confirmed by subsequent monitoring; a full analysis is needed on whether these aims have been achieved.

But there are still many road-focused agencies which have undergone less radical structural changes using policies and actions to coordinate different modes of transport.

Users want to be conveniently and easily on the move, with flexibility and convenience to switch between modes and networks.

The TC 1.1 WG1 has developed a Toolkit for Multi-Modal Collaboration within the framework of the Conceptual Model of Multi-Modal Collaboration with four groups of issues and functions that the transport agencies has to fulfil to improving multi-modal mobility:

• Objectives and strategy
• Processes and systems
• People, values and behaviour
• Structures
The Toolkit has been developed to make it possible for every organisation: to develop and implement individual packages of actions to improve multi-modal mobility based on the current situations and the organisational framework conditions.

Irrespective of the combination of actions initially proposed, customer satisfactions, with the significant parameters of efficiency and effectiveness, should always take priority over defining the way forward.

The report of TC 1.1 WG1 includes:

- 7 High-level conclusions and recommendations in respect of overall multimodal challenges and decision-making.

- 8 Conclusions in specific considerations of multi-modal structures and the case for structural re-organisation.
PRODUCTS OF CYCLE 2011 – 2015

TC 1.1 WG2 “Assessment of performance of the Administration” drafted the report (2016R22EN):

“GUIDE TO GOOD PRACTICE PERFORMANCE FRAMEWORKS”
(26 pages plus Appendix of 105 pages which includes a Best Practice Toolkit, a Case Study Overview and the Detailed Case Studies)

Among the authors, the following Speakers or Attendees:

Alan Colegate (Joint Chair of TC 1.1 WG2)
Anne-Séverine Poupeleer
Ilaria Coppa (now Co-Leader TC A1 WG1)

And let’s mention Mara Campbell (Joint Chair of TC 1.1 WG2 and current Chair of TRB ABC30 Committee on Performance Management (she joined us in the 3rd TCA1 meeting in Rhode Island)
The mentioned **Best Practice Toolkit** (4 pages) has been designed to assist organisations in conducting and assessing their own approaches against what is regarded as a good practice approach to **performance measurement** and cover the phases of Plan and Policy, Framework, Measures and Reporting.

**Good performance information is an essential part of good management.**

It assists in ensuring accountability (not just “compliance”), transparency and aids decision making by road and transport administrations.

There is no correct answer on what should be measured by any road authority but one good answer is:

> **“What we measure shapes what we collectively strive to pursue, and what we pursue determines what we measure”**

(Australian Commission on the Measurement of Economic Performance and Social Progress)

Among road and transport agencies there is an increasing emphasis on **improving the quality of performance indicators** to explain what road and transport providers do and why.
**PRODUCTS OF CYCLE 2011 – 2015**

**Good performance information** it's a key element of the accountability and transparency. Regular **reporting** of good performance information tells Government and public about the work agencies do. It should also help agencies make decisions.

**IMPORTANT: “The PUBLIC VALUE”:**

Concept explored during the previous cycle 2007-2010 by TC B.1 “Good performance for road administrations” which developed the “Public Value Chain”. *(see report 2012R07-EN “Improved Services For Customers”)*

And the “Public Value Chain” depicts that road agencies, together with their partners and co-producers, take **inputs** and process them through the filter of **user / customer satisfaction** to deliver their intended outcomes.
Performance reporting: has a role to play in all phases of the management and accountability cycle and should aim to provide timely, credible and relevant information for management.

The TC 1.1 WG2 report *(2016R22EN)* does not seek to identify specific performance measures or indicators but to identify the frameworks and constructs that will measure the success of the approach taken in:

- developing a **performance measurement framework**
- and assist in **communicating** those results to the community
External reporting of performance has a role to play in all phases of the “management and accountability cycle” and provides an opportunity for agencies to demonstrate and promote their achievements and explain any variance from expectations or reference points.

When developing a performance measurement framework:

The first step is identify a program of works; and the next step is to identify measures or key indicators that align with each part of the program bearing in mind the Performance Measurement Hierarchy (useful in complex organisations).
**PRODUCTS OF CYCLE 2011 – 2015**

**Stablishing a clear “line of sight”:**
One of the most important concepts in performance measurement.
Refers to the ability of employees to see how their work and measures relates to the work and performance of others and ultimately organisational success which is to achieve the “ultimate aim”: the “overall outcome”.

**Among other conclusions, the report sets out:**

5 recurring **Themes arising** regardless of the level of jurisdictional administration or the complexity of the road and transport network

6 maturity **attributes** regarding performance measurement reporting (best performers have gone beyond simple “compliance”)

**A Table which shows the checkpoints developed**

**Elements of Best Practice** to be considered

**Reflections on future directions**
Finally, during Cycle 2011-2015 the TC 1.1 WG3 “Good Governance and Anti-Corruption Measures” drafted the report (2016R21EN):

“GOOD GOVERNANCE AND ANTI-CORRUPTION MEASURES”
(25 pages plus 34 pages for three Appendixes including Case Studies on influence of media, on Good Governance and Anti-Corruption Measures, and a Integrity Toolkit Questionnaire)

Among the authors were the following Speaker:

Michel Démarre (now Co-Leader of TC A1 WG3)
And among the responsible for the quality control was the Speaker:
Alan Colegate (Joint Chair of TC 1.1 WG2)
Another author is Mara Campbell (USA) Joint Chair in TC 1.1 WG 2)

TC 1.1 WG3 has focused its activities on two main elements of integrity:

- The influence of the media in creating perceptions relating to institutional integrity
- The practical application of the PIARC Integrity Toolkit and level of knowledge

The Integrity Toolkit (2012R18EN) published in October 2012 was developed in the former cycle 2008-2011 by TC B1 WG1 “Best Practices for Good Governance” Co-Chaired by the Speakers Jonathan Spear and Alexander Walcher, and also was member of it the now correspondent member of TC A1 André Bernard (France).
PRODUCTS OF CYCLE 2011 – 2015

The mentioned TC B1 WG3 drafted the report “Best Practices of Good Governance – Institutional Integrity” 21012REN (87 pages plus References, a Integrity Survey and the Integrity Toolkit itself).

The overarching goal was to identify the existing situation governing business ethics for road administrations worldwide.

Among the key outputs as key definitions, terminology, a Survey, and Case Studies:

It should be noted:

PRODUCTS OF CYCLE 2011 – 2015

The conceptual model “Cycle of Integrity”

The associated Integrity Toolkit of measures to prevent, indentify and enforce against bad behaviour and practices.

Analysis of societal (macro level) and Project/Programme (micro level) implications of the “Cycle of Integrity” and the Toolkit.

And the overall analysis in the Report and set of recommendations from above.
Coming back to the TC 1.1 WG3 report “GOODS GOVERNANCE AND ANTI-CORRUPTION MEASURES” (2016R21EN) the purpose is three-fold to:

- Current situations with a focus on the influence of the media in creating perceptions relating to Institutional Integrity (Road projects spark public interest and media attention).
PRODUCTS OF CYCLE 2011 – 2015

- Provide a snapshot of the effective benchmarks of integrity laws, policies and measures including implications of increased scrutiny by the media.

- Showcase the “Well-Prepared Projects” concept which holds that “the better a Project is prepared, the smaller the risks”, emerged from discussions involving Multilateral Development Banks and contractor’s and international consultants’ associations as CICA and FIDIC.

- All the Conclusions of the TC A1 WGs were presented in the 25th World Road Congress in Seoul (November 2015)
LEADERSHIP
CUSTOMERS / USERS
Thank you for your attention!
Merci de votre attention!
¡Gracias por su atención!

José Manuel Blanco Segarra (Spain) (西班牙)
TC A1 Chair
Chief Engineer of National Road Administration in the Region of Extremadura (Spain)
jmblanco@fomento.es
jblaseg@ciccp.es
当前时段
现代综合交通运输体系之发展
The development of modern and integrated transportation system in China
2018.4

一、形势要求和交通发展阶段
The development phase and demands of transportation in China
（一）交通运输业在经济社会发展中的定位：
Positioning of transportation in economic and social development
1、基础性(foundation) 服务性(service)
2、基础性(foundation) 先导性(guide) 服务性(service)
3、基础性(foundation) 先导性(guide) 战略性产业(strategic industry)
4、最新研究提出：基础性(foundation) 先导性(guide) 战略性(strategic)
国际性(international) 服务性(service)

(二) 交通发展的历史阶段
historical stage of transportation development
1986年，中国科协组织100位专家上书国务院，提出交通瓶颈制约问题
“十三五”期，我国交通运输处于由“基本适应”向“适度超前”过渡的阶段
交通由长期“跟跑型”向全面“领跑型”转变，需求特征及发展方向、视野、动力等都将发生深刻变化
（三）国家发展的形势要求
national development demands

中国特色社会主义进入新阶段
我国社会主要矛盾转化为人民日益增长的美好生活需要和不平衡不充分的发展之间的矛盾
The main social contradiction of China is the contradiction between the needs of the people and the unbalance of the development.

（四）交通发展的阶段性特征
periodical characteristic of transportaiton development

综合交通基础设施加快成网
Integrated transportation infrastructure

各种运输方式融合发展
Multi-modal transportation

客运快速化和货运物流化需求凸显
Passenger and freight transportation

交通运输新模式新业态不断涌现
New transportation mode

交通在国家战略实施中地位更加突出
Support national strategy
### 1. 综合交通基础设施加快成网

**Integrated transportation infrastructure**

- 铁路建成与在建总里程约17.5万公里，为规划目标的88%。其中，高铁4万多公里。
  
  175,000 km railway (including constructed or under construction), 88% of the planned mileage. Including 40,000 high-speed railway.

- 公路总里程达到540万公里，高速公路建成约16万公里，其中国家高速公路建成12万公里，为规划目标的88%。
  
  5.4 million km highway, 160,000 km expressway, including built 120,000 km expressway, 88% of the planned mileage.

- 内河高等级航道达标里程达到85%（受制于环境保护），
  
  high-grade inland river mileage: 85% of the planning

- 民航运输机场建成270个，剩余机场多为支线机场，机队从2650架发展到4200多架。
  
  270 airports, 4200 airplanes.

---

### 2. 各种运输方式融合发展

**Multi-modal transportation**

- 交通从瓶颈制约到初步缓解再到基本适应的发展阶段，各种运输方式从短缺到规模迅速扩张，以各自发展为主，新的历史时期进入到由大到强的新发展阶段，各种运输方式的内生动力需要融合统筹协调，充分发挥各种运输方式的比较优势和组合效率，进入到综合运输发展的新阶段。

  China has entered the era of integrated transportation, and the comparative advantage and combination efficiency of various modes of transportation have been highlighted.
3、客运快速化和货运物流化需求凸显

Passenger and freight transportation

- 高铁、高速公路、民航所拥有的规模和数量，使得长距离出行实现了快速化。
  
The scale and quantity of high-speed railways, highways and civil aviation make long-distance travel efficient.

- 货物运输进入到多式联运和物流链运输的新阶段（18部委18条）。
  
Freight transportation has entered the era of multi-modal transportation and logistics chain transportation.

4、交通运输新模式新业态不断涌现

New transportation mode

- 以“互联网+”为主要特征的交通运输新模式、新业态不断涌现：交通+观光农业、交通+旅游、交通+产业、交通+城市、交通+枢纽经济（临空临港高铁）
  
Internet plus mode: transportation+tourism, transportation+industry, transportation+city, transportation+tourism agriculture

- 线上线下联动的公路港网络，无车承运人 freight forwarder

- 带动交通组织模式、管理模式、法律法规的新变化
  
New change of organization mode, management mode, laws and regulations.
5. 交通在国家战略实施中地位更加突出
Support national strategy

- 交通是京津冀协同发展的骨骼系统，是率先发展领域 Beijing-Tianjin-Hebei transport coordination development
- “一带一路”五通当中交通联通为首 One Belt One Road Initiative
- 长江经济带发展纲要唯一的附件：长江经济带立体交通走廊 Yangtze River economic zone development
- 交通基础设施是贫困地区脱贫致富的首要条件。Infrastructure construction in poverty zone

当前时段，我国交通运输发展处于支撑全面建成小康社会的攻坚期、优化网络布局的关键期、提质增效升级的转型期、进入现代化建设新阶段，要准确把握新形势、新要求、新任务，推动交通质量变革、效率变革、动力变革，切实转变发展思路、方式和路径，开创发展新格局。

China transportation development has entered an key era of network layout optimization and service quality improvement.
二、当前时段的主要任务

Current main task

建设安全便捷、经济高效、绿色智慧、开放融合的现代化综合交通运输体系

Safe and convenient, economical and efficient, green and intelligent, open and integration transportation system.

（一）基本原则和发展导向

Basic principles and development orientation

基本原则 Basic principles

<table>
<thead>
<tr>
<th>基本原则</th>
<th>英文含义</th>
</tr>
</thead>
<tbody>
<tr>
<td>先行引导 适度超前</td>
<td>Appropriate advance</td>
</tr>
<tr>
<td>衔接协调 统筹发展</td>
<td>Coordination</td>
</tr>
<tr>
<td>服务为本 提质增效</td>
<td>Service oriented</td>
</tr>
<tr>
<td>创新驱动 安全绿色</td>
<td>Innovation driven</td>
</tr>
</tbody>
</table>
(一) 基本原则和发展导向
Basic principles and development orientation

<table>
<thead>
<tr>
<th>发展导向 development orientation</th>
<th>Network layout optimization</th>
<th>Integrated service</th>
<th>Intelligent technology</th>
<th>Green development</th>
</tr>
</thead>
<tbody>
<tr>
<td>以网络化布局为基础</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>以一体化服务为根本</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>以智能化技术为牵引</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>以绿色化发展为方向</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

1、完善多向连通综合运输通道 Integrated channel

遵循国家战略发展需要，按照拓展区域发展新空间的要求，综合考虑国土空间开发、城市群轴带布局、产业布局以及客货运输需求变化等因素，论证梳理“八纵八横”高速铁路网布局、“71118”高速公路网布局、水运主通道衔接，提出建设横贯东西、纵贯南北、内畅外通的“十纵十横”综合运输大通道

According to the demands of national strategy, regional development, homeland use, and industry agglomeration, China plans to construct **10 longitudinal and 10 transverse integrated channels** for passenger and freight transportation.
“十纵十横” 综合运输大通道布局
10 longitudinal and 10 transverse channels

(一) 纵向综合运输通道
10 longitudinal channels

(二) 横向综合运输通道
10 transverse channels

2、提出基础设施“三张网” 布局
3 networks of infrastructure

构建高品质的快速交通网
High quality expressway network

强化高效率的普通干线网
High efficiency arterial way network

拓展广覆盖的基础服务网
High coverage basic road network
3、完善综合交通枢纽空间布局
Integrated transportation hub layout optimization

国际性综合交通枢纽由北、上、广扩展为15个城市
15 international integrated transportation hubs

- 重点打造北京-天津、上海、广州-深圳、成都-重庆国际性综合交通枢纽
- 建设昆明、乌鲁木齐、哈尔滨、西安、郑州、武汉、大连、厦门等国际性综合交通枢纽

全国性综合交通枢纽根据筛选原则与标准, 最终确定67个节点城市
67 national integrated transportation hubs

(三) 强化交通的战略支撑作用
Support the national strategy

1、京津冀协同发展战略
Beijing-Tianjin-Hebei coordination development

构建京津冀协调发展的一体化网络, 形成以“四纵四横一环”综合运输大通道为主骨架、多节点、网格状区域交通新格局, 打造“轨道上的京津冀” (2020年前实施9个项目, 总里程约1100公里) Beijing-Tianjin-Hebei on Metro (9 projects by 2020, 1100 km in total)。

为北京非首都功能疏解和打造世界级城市群发挥支撑引领作用。Weaken the non-capital function of Beijing and build the world-class urban agglomeration.
（三）强化交通的战略支撑作用

Support the national strategy

2、建设长江经济带综合立体交通走廊

Integrated transportation corridor of Yangtze River Economic Zone

（高效的多式联运体系，降低物流成本，支持产业梯度转移）
(efficient multi-modal transportation, reducing the logistics cost, supporting industrial gradient transfer.)

打造长江黄金水道 构建立体交通走廊

Golden waterway and integrated transportation corridor

（三）强化交通的战略支撑作用

Support the national strategy

3、发挥交通扶贫脱贫攻坚基础支撑作用 Poverty governance

强化贫困地区骨干通道建设
arterial way construction of poverty area.

夯实贫困地区农村公路基础设施
rural highway construction of poverty area.

推进康庄大道路 幸福小康路
平安放心路 特色致富路建设
实施四优先三放宽一提高政策
（四）加快运输服务一体化进程
Integration of transport service

1、提升客运服务安全便捷水平

Improve the safety and convenience of passenger service, and build the multi-modal passenger transportation and one-stop service.

推进跨运输方式的客运联程系统建设，完善枢纽站场联运服务功能，统筹运输方式间衔接、班次对接，鼓励开展多种形式的联程运输服务，推动航空、城市轨道、高铁等方式“一票到底”和“行李直挂”。推广普及电子客票、联网售票、实名制购票，推动旅客“一站购票”、“一票出行”。

Build the multi-modal passenger transportation system
Optimize the multi-modal service function of hubs
 Coordinate the transport capacity of different modals
Provide the one-stop ticketing service, one-ticket travel and luggage check through service.

2、促进货运服务集约高效发展

Promote the efficient and intensive freight service.

大力发展以集装箱和箱式半挂车为运载单元的铁、公、水、空多种组合形式的多式联运 multimodal transport
推动无车承运人发展 freight forwarder
推进跨区域甩挂、企业联盟甩挂、网络型甩挂、干线运输与城市配送衔接甩挂等模式发展 regional trailer, enterprise alliance, urban freight
大力发展江海联运
制定多式联运规则和多式联运经营人管理制度 regulations on operators
加强信息互联、流程统一、标准对接 information connection, unified process and conformed standard
（四）加快运输服务一体化进程
Integration of transport service

3. 发展先进适用的技术装备 advanced technology and equipment

（1）推进先进技术装备自主化 localization
- 提升先进装备的技术水平和应用规模
- 发展多式联运成套技术装备（重点是运载单元） multi-modal transport equipment
- 积极发展公路专用运输车辆 special road transport vehicles
- 积极发展支线飞机、全货机（没有适合高原的）和通用航空器 general aviation

（2）促进技术装备标准化发展 standardization
- 加快推进铁路多式联运专用装备和机具技术标准体系建设 railway multi-modal transport equipment
- 加快推进内河运输船舶标准化 inland waterway transport vessels
- 推广应用集装箱和单元化装载技术 assemble loading technology
- 建立共享服务平台标准化网络接口和单证自动转换标准格式 network interface of sharing and service platform

（五）提升交通发展智能化水平
Improve the intelligence level of transportation

1. 夯实交通发展智能化基础 Lay the foundation
- 打造泛在的交通运输物联网 Internet of Things
- 推进云计算与大数据应用 cloud computing and big data application
- 构建新一代交通信息基础网络 transport information network
- 保障交通网络信息安全 information safety

2. 促进交通产业智能化变革 Promote the transform
- 实施“互联网+”行动计划 培育壮大智能交通产业 internet plus plan
- 加快实施云计算、大数据与物联网、移动通信技术与交通运输深度融合 Transportation industry plus advanced technology
- 推动基础设施和载运工具数字化、网络化，运营运行智能化 Digitalization of transportation infrastructure
- 试点示范新一代国家交通控制网和智慧公路、北斗高精度定位、全自动码头 National control network, intelligent highway, Beidou high precision positioning, fully automatic wharf.
(五) 提升交通发展智能化水平

Improve the intelligence level of transportation

3、优化交通运行和管理控制

Optimization of traffic operation and management control

建立高效运转的管理控制系统，提升铁路、公路、港口、航空运行控制和生产调度的智能化水平

推进部门间、运输方式间交通管理在线协同和应急联动

coordination of multi-modal management, control, emergency disposal and response.

推广车路协同技术，提升装备和载运工具智能化和自动化水平 V2V and V2I technology

4、健全智能决策支持与监管

Improvement of intelligent decision-making support and supervision

充分利用政府和企业数据资源，建立健全大数据科学辅助决策机制 Public and private data fusion

推动在线行政许可“一站式”服务 one-stop administrative service

推动许可证件和执法案件数字化及异地互认 nationwide mutual recognition of administrative permission

（六）促进交通运输绿色化发展

Promote green development of transportation

1、结构优化是绿色发展的根本 Development structure optimization

京津城际Beijing-Tianjin HSR

●京津城际一列车载客1000多人，相当于27量大巴的载客量，一天的客运量相当于1000辆大巴。相对于占用公路资源多、安全舒适性低、排放量大的大巴具有明显优势

1000 people per one carriage

●京津城际CRH3型“和谐号”动车组一个单程人均耗电仅1.5度，单位能耗是波音747飞机的3%，是私人汽车的20%。low cost ,3% of B747, 20% of vehicle.
新能源 new energy

能源消费结构不合理，煤炭占终端能源消费比重过高，弃水、弃风、弃光现象严重

Unoptimized energy structure

非化石能源占比 Non-fossil energy proportion

2015
2020
2030
12%
15%
20%

（六）促进交通运输绿色化发展
Promote green development of transportation

2、技术进步 Advances in technology

新能源载运工具 new energy carriers

纯电动汽车 electric vehicle

清洁能源汽车 clean energy vehicle

LNG船 LNG boat
（六）促进交通运输绿色化发展
Promote green development of transportation

3. 加强生态保护和污染治理
Ecological environment protection and pollution control

加强基础设施全过程全周期生态保护 full cycle ecological protection of infrastructure construction
实施长三角珠三角环渤海船舶排放控制区 ship discharge
推动船舶靠泊使用岸电工程 shore power engineering

（七）加强平安交通建设 transportation safety

1. 加强安全生产管理
Safety management of production

2. 加快安全监管能力建设
Safety supervision ability

3. 推进应急体系建设
Safety emergency system
(八) 拓展交通运输新领域新业态

Explore new transportation mode

1、积极引导交通运输新消费（transportation + tourism）
- 汽车营地、房车、通用航空、邮轮、定制公交。80、90后自驾车出行旅游占到40%，通用航空增幅超过两位数，邮轮旅游蓬勃发展
- car camping, loose pulley, general aviation, motor homes

2、大力发展交通运输新经济（transportation + hub economy）
- 培育壮大高铁经济、临空经济。高铁建设投资带动关联产业的乘数效应超过三倍，各大国际性枢纽机场均大力发展临空经济区，北京新机场临空经济区超过150平方公里，辐射半径达到200公里以上
- HSR economy, airport economy.

3、打造交通物流融合新模式（transportation + logistics）
- 提出打通全链条、构建大平台、创建新模式、促进交通物流融合发展。建设智能物流配送体系，打造全国智能化的线上线下联动的公路港网络，积极发展无车承运人；全国300万营运货车实时位置实现跟踪定位
- Online and offline road network, real positioning of freight vehicles.

4、推进交通空间综合开发利用（transportation + city development）
- 鼓励交通基础设施与地上、地下周边空间综合利用，推动交通枢纽站场、立体停车设施与周边空间的联动开发，统筹规划布局地下交通基础设施与地下综合管廊
- Exploitation of transport infrastructure including hub, parking lot.
(九) 全面深化交通运输改革  Deepen reform

1、深化交通运输管理体制机制改革 management institution reform
大部制体制机制制度改革，应形成统一政策与方针、统一战略与规划、统一财政与行政、统一标准与法规、统一服务与监管的一体化交通行政管理新局面
Build the big transportation ministry and department in every level of administration

2、推进交通市场化改革 market reform
交通运输市场 价格机制 铁路客货运输(区域分割) 公路养护 民航运输市场化 出租汽车行业改革
Price, Passenger and freight transportation, highway maintenance, faith system, etc.

3、加快交通投融资改革 investment and financing reform
财政事权和支出责任 PPP模式 交通发展基金—包括政府性基金和企业性基金
Financial governance, PPP model, transportation development funding

谢谢
Thank You
Transport integration in the coordinated development of Beijing-Tianjin-Hebei region

Beijing Municipal Commission of Transport
Zhao Yang
April, 2018

Contents

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Development status of transport integration in Beijing-Tianjin-Hebei region</td>
</tr>
<tr>
<td>2</td>
<td>Key points of transport integration in Beijing-Tianjin-Hebei region</td>
</tr>
<tr>
<td>3</td>
<td>Main achievements of transport integration in Beijing city</td>
</tr>
<tr>
<td>4</td>
<td>Development prospects</td>
</tr>
</tbody>
</table>
Xi Jinping, the General Secretary of China, gave a keynote speech on February 26, 2014 when he inspected Beijing city and provided important instructions in terms of the coordinated development of Beijing-Tianjin-Hebei region.

- Decentralizing functions unrelated to its status as the national capital
- Regarding transport integration as the pioneer field in the coordinated development of Beijing-Tianjin-Hebei region
- Facilitating the construction of a fast, convenient, high-efficient, safe, high-capacity, and low-cost interconnected comprehensive transportation network

1. Development status of transport integration in Beijing-Tianjin-Hebei region

Located in the important area at and around the capital city and its environs, Beijing-Tianjin-Hebei region is close to Bohai, situated in front of Taiyue Mountain, and connects northern, northeastern, and northwestern China. Having a critical strategic position, Beijing, Tianjin, and Hebei in the region are close in geographic locations and people there are intimate. With close geographic location and same cultural inheritance, Beijing, Tianjin, and Hebei have a long history and appropriate communication radius, so they are able to integrate with each other and realize coordinated development.

2016:
Area: $2.16 \times 10^5$ km$^2$
Population: $1.1 \times 10^8$
GDP: $7.4 \times 10^{12}$ yuan, accounting for 10% of the total country
Beijing which only occupies 2.3% of the total area of the country carries 8% of the total population
Development status of transport integration in Beijing-Tianjin-Hebei region

After years of development, the transportation construction in Beijing-Tianjin-Hebei region has gained a considerable progress. A comprehensive transportation system comprising multiple transportation modes including aviation, railway, port, and highway transports has been basically formed. The transportation infrastructure in the region are comparable to those in the Yangtze and Pearl River Deltas in terms of the development level at present, which lays a solid basis for the coordinated development of the region.

General development situation of transportation infrastructure in Beijing-Tianjin-Hebei region (2016)

<table>
<thead>
<tr>
<th>Region</th>
<th>Area ($\times 10^4$ km$^2$)</th>
<th>Airport</th>
<th>Railway</th>
<th>Port</th>
<th>Highway</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Density ($/\times 10^4$ km$^2$)</td>
<td>Length (km)</td>
<td>Density ($/\times 10^4$ km$^2$)</td>
<td>Capacity ($/\times 10^8$ ton)</td>
</tr>
<tr>
<td>Beijing-Tianjin-Hebei</td>
<td>21.6</td>
<td>8</td>
<td>0.37</td>
<td>8496</td>
<td>3.9</td>
</tr>
<tr>
<td>The Yangtze Delta</td>
<td>21</td>
<td>18</td>
<td>0.85</td>
<td>4997</td>
<td>2.4</td>
</tr>
<tr>
<td>Pearl River Delta</td>
<td>18</td>
<td>7</td>
<td>0.39</td>
<td>3398</td>
<td>1.9</td>
</tr>
</tbody>
</table>

Note: 1. The Yangtze Delta in the table represent Jiangsu province, Zhejiang province, and Shanghai, and Pearl River Delta represents Guangdong province;
2. Data in the "()" denote the length of expressways (km).

The contents are proposed to take one core, two cities, three axes, four zones, and multiple joints as the framework to promote the orderly decentralization of the functions of Beijing unrelated to its status as the capital.
Constructing a broad comprehensive transportation channel and highlighting the building of the Beijing-Tianjin-Hebei highway network system consisting of four transverse and four longitudinal transportation lines as well as a transportation line surrounding Beijing, so as to facilitate the interconnection of the region.

1. Development status of transport integration in Beijing-Tianjin-Hebei region

Institution mechanism of transport integration (at four levels)

- **National level**
  - Leading group for the coordinated development of Beijing-Tianjin-Hebei region (the State Council, June, 2014)
  - Leading group for the transport integration in Beijing-Tianjin-Hebei region (Ministry of Transport, July, 2014)

- **Beijing municipal level**
  - Leading group for facilitating the coordinated development of Beijing-Tianjin-Hebei region in Beijing

- **Transport commission level**
  - Leading group for the transport integration in the coordinated development of Beijing-Tianjin-Hebei region (August, 2014)

- **Beijing and Tianjin cities as well as Hebei province**
  - Coordinating group for the transport integration in Beijing-Tianjin-Hebei region (May, 2015)
Transport integration builds the framework and is the pioneer field in the coordinated development of Beijing-Tianjin-Hebei region. The aim of transport integration is to build a multi-node, network, and region-wide transportation network with rail transport as the backbone and to construct a unified and open regional transportation market structure.

Transport integration can be divided into the following eight aspects:

1. Building a high-efficient and dense rail transport network
2. Improving a convenient and unblocked highway transport network
3. Constructing modern port clusters
4. Building world-class aviation hubs
5. Developing urban transportation giving priority to public transit
6. Improving intelligent management level of transportation
7. Improving service level for the regional integrated transport
8. Developing safe, low-carbon, and sustainable transportation
Development status of transport integration in Beijing-Tianjin-Hebei region

Key points of transport integration in Beijing-Tianjin-Hebei region

Main achievements of transport integration in Beijing city

Development prospects

3. Main achievements of transport integration in Beijing city

1) Beijing-Daxing International Airport

Beijing-Daxing International Airport is a key project of the country and the Ministry of Transport in the 13th Five-Year Plan. The construction of the airport has significant importance for satisfying the aviation transport demand in Beijing and its surrounding area and more favorably serving the integrated and coordinated development of Beijing-Tianjin-Hebei region. Beijing Municipal Commission of Transport is responsible for the construction of periphery transportation infrastructure of the new airport, including the construction of the expressways and rail transport in the transportation network consisting of five longitudinal and two transverse transportation lines. In addition to this, it is also supposed to guarantee the transportation service during the construction of the new airport.
2) Subsidiary centers of Beijing

According to the urban strategic positioning of the central government for the capital of China, subsidiary centers of Beijing are supposed to be built to demonstration areas for the coordinated development of Beijing-Tianjin-Hebei region. Beijing Municipal Commission of Transport has clarified the key emphases in the construction of transportation infrastructure and formulated construction tasks for transportation infrastructure in subsidiary centers by the end of 2020. It is estimated that the Beijing-Qinhuangdao expressway and the ring expressway around Beijing (Tongzhou–Daxing section) will be completed and opened to traffic in the year of 2018. At that time, Beijing will accomplish all the missions for connecting dead-end highways assigned by the government.

3) 2022 Olympic Winter Games

2022 Olympic Winter Games will be the top-level and most influential international sports event after the 2008 Olympic Games in Beijing. It also will become an opportunity for the integrated development of transportation in Beijing-Tianjin-Hebei region. Based on key projects, relevant departments in Beijing strengthen planning and communication and facilitate the interconnection of regional highway network. By the end of 2018, the plain section of Yanqing–Chongli expressway and Xingyan expressway will be completed and opened to traffic.
4) Xiong’an New Area
Xiong’an New Area is a new supporting point in the coordinated development of Beijing-Tianjin-Hebei region. Beijing is now actively promoting the preliminary work in the construction of Beijing-Xiong’an expressway and signing the connection contract. Beijing and Hebei will simultaneously begin to build the expressway.

3. Main achievements of transport integration in Beijing city

In addition to this, many breakthroughs have been made in terms of industry development.

- Transportation standardization

- Interconnection construction of China T-union
A total of 139 bus routes have been built in 2015. By the end of 2016, 876 urban bus routes and 122 suburban bus routes have been constructed. The China T-union has been started using by the end of 2017. The travel mode of traveling the whole Beijing-Tianjin-Hebei region with a single China T-union.
3. Main achievements of transport integration in Beijing city

- **Establishing the National Urban Energy Measurement Center (urban transportation)**
  Proposed by the Ministry of Transport, the first industrial energy measurement center was approved to be built by the General Administration of Quality Supervision, Inspection and Quarantine of the People’s Republic of China in May, 2017. Ever since the establishment, the center has provided supports for facilitating the construction of the statistical and monitoring system for energy conservation and emission reduction of transportation sector in Beijing-Tianjin-Hebei region from aspects including top-level design, technical services, and standard support of the energy measurement.

- **Joint administration of illegal overloading of vehicles in Beijing-Tianjin-Hebei region**
  It is expected to improve the integrated consultation mechanism in Beijing-Tianjin-Hebei region. For this purpose, a series of administrative provisions and local standards have been issued. Relevant departments in Beijing have negotiated with those in Hebei concerning the outline agreement about stations jointly constructed in Beijing and Hebei, amendment suggestions for the transfer of illegal overloading cases, and the justification standard for evidences of offsite punishment of illegal overloading cases.
4. Development prospects

The overall functional orientation and industrial distribution of the region more tightly bond cities in the urban agglomeration together. Beijing, Tianjin, and Hebei should deal well with the relationships between government and market, function decentralization and undertaking, individual and system, and human and nature.

Planning Summary of Coordinated Development of Beijing-Tianjin-Hebei Region—functional orientation

- Beijing: National political and cultural centers, international communication center, and scientific and technological innovation center
- Tianjin: National research and development base for advanced manufacturing, core area of international shipping in northern China, demonstration plot for the innovative operation in financial domain, and pilot area for the reform and opening-up
- Hebei: Important national base for modern commercial logistics, pilot site for industrial reform and upgrading, demonstration plot for the new-type urbanization and urban-rural integration, and ecological and environmental support area for Beijing-Tianjin-Hebei region
To realize the coordinated development of Beijing-Tianjin-Hebei region, the priority has to be given to transport integration. The fundamental objectives are to more favorably decentralizing the functions of Beijing unrelated to its status as the national capital, more preferably support the coordinated development of the region, and meet the demand for forming a new nucleus of economic growth in the densely inhabited district. In the process, the relationships in the following three aspects need to be properly handled:

4. Development prospects

In the short term, regional transport integration is expected to make a great progress and spread the passenger transport lines to all cities at prefecture level and above, so as to build the transportation circle in which any place in Beijing, Tianjin, and Baoding is reachable in one hour. It is supposed to connect dead-end highways in the national expressway network, fundamentally improve the transportation condition in poverty-stricken area around Beijing and Tianjin, cover the whole region with high-grade highways, and effectively ease the traffic through Beijing. In addition to this, it is supposed to greatly improve the collaborative effect between ports and airports and upgrade the collecting and distributing conditions in ports and airports. Moreover, it is expected to make a leap development in the intelligence degree of transportation and basically form the integrative service structure.

It is expected to form a networked comprehensive transportation system and an integrated service structure. In the period, the main framework of the inter-city railways should be basically constructed and the highway network should to be improved and more unimpeded. The overall service level of port and airport clusters, intelligence level of transportation, and operation and management capacity are supposed to reach international advanced level, accompanying with the construction of a safe, reliable, convenient, high-efficient, affordable, and environmental friendly comprehensive transportation system.
Welcome to learn latest trends in Beijing transportation through WeChat official account of Beijing transportation, official website and official micro-blog of Beijing Municipal Commission of Transport. With regard to complaints about transportation service, please contact via the 24-h telephone: 12328.

A team with top quality and speed in China

Thank you for your attention!
Development and prospect of high-speed railways in China

China Railway Economic and Planning Research Institute

Lin Zhonghong

1. Reviews on the development of high-speed railways
2. Prospects on the development of high-speed railways
1. Reviews on the development of high-speed railways

In 2004, it is clearly proposed in the Mid-Long Term Railway Network Plan that the country need to build main high-speed railways and intercity railways. In 2008 and 2016, the overall scale and layout of high-speed railways were further adjusted.
On August 1, 2008, the construction of the Beijing-Tianjin intercity railway line at the running speed of 350 km/h was completed.

On December 26, 2009, Wuhan-Guangzhou high-speed railway line at the running speed of 350 km/h was built and open to traffic.
The development of high-speed railways in China

On June 30, 2011, construction of Beijing-Shanghai high-speed railway with the highest standard and at the running speed of 350 km/h was completed.

On December 1, 2012, Harbin-Dalian high-speed railway line was constructed and opened to traffic.
The development of high-speed railways in China

On December 26, 2014, Lanzhou-Xinjiang high-speed railway line was built.

On December 6, 2017, the construction of the high-speed railway line from Xi’an to Chengdu was completed.
Main characteristics of the development of high-speed railways in China

1. Large scale and high standard of construction

The high-speed railway network comprises main high-speed railways and intercity railways.

The scale of high-speed railways was planned to be more than $1.2 \times 10^4$ km in 2004 and adjusted to be over $1.6 \times 10^4$ km in 2008. Moreover, according to the new plan, the scale is expected to be $3 \times 10^4$ km in 2020.

The newly built main high-speed railways are constructed according to the requirement for running at the speed of 350 km/h. Some main railway lines that mainly service for customers, accompanying with freight transport are constructed with the expectation of running at the speed of 200 km/h~250 km/h.

2. Highlighting construction of great passageways

Beijing–Harbin (Dalian) 350 km/h
Beijing–Guangzhou (Hong Kong) 350 km/h
Shanghai–Shenzhen (coastal city) 250 km/h–350 km/h

“四纵”高铁
Main characteristics of the development of high-speed railways in China

2. Highlighting construction of great passageways

Based on four-vertical and four-horizontal lines, the coverage range of high-speed railways is further expanded, so as to promote coordinated development among regions.

Main characteristics of the development of high-speed railways in China

3. Strengthening connection between regions

Based on four-vertical and four-horizontal lines, the coverage range of high-speed railways is further expanded, so as to promote coordinated development among regions.
Main characteristics of the development of high-speed railways in China

4. Building intercity railways

- Economically developed and populous areas
- Bohai rim
- Yangtze River Delta
- Pearl River Delta
- Changsha-Zhuzhou-Xiangtan urban agglomeration
- Building intercity railways

5. Constructing comprehensive transport hubs

- Based on the functional, systematic, advanced, cultural and economic principles, a number of modern railway passenger stations are built and renovated. Large passenger stations are connected with subway and bus routes, thus forming a modern and comprehensive transport hub.
5. Constructing a comprehensive transportation hub—Shanghai Hongqiao
5. Constructing a comprehensive transport hub—Hongqiao in Shanghai

- Elevated waiting layer
- Railway platform layer
- Basement floor
- Subway Line No.2 and Line No.10
- Subway Line No.5 and Line No.17

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5. Constructing a comprehensive transport hub—New Station in Wuhan
By the end of 2017, the operating mileage of high-speed railways in China has been up to $2.5 \times 10^4$ km, accounting for more than 66% in the total mileage of high-speed railways in the world.

2. Prospects on the development of high-speed railways
Based on the original four-vertical and four-horizontal lines, it is necessary to build additional high-speed railways with suitable standard and meeting the needs of development. On this basis, a high-speed railway network with eight-vertical and eight-horizontal main lines as skeletons and with regional connection lines and intercity railways for supplement is expected to be formed, so as to realize connections of high-speed railways between capital cities and between different regions.

(1) Building a developed and perfect high-speed railway network

By 2025, the operating mileage of high-speed railways in China is expected to reach $3.8 \times 10^4$ km. By 2030, the operating mileage of high-speed railways in China will be up to $4.5 \times 10^4$ km.
(2) Developing high-speed train technology with a higher speed

China has carried out researches on key technologies of high-speed passenger transport equipment at the speed of more than 400 km/h and maglev transportation system, which provides technical reserves for the construction of super high-speed traffic systems in the future in China.

(3) Building intelligent high-speed railways

Technologies, such as Internet of things, big data, cloud computing, artificial intelligence, robot, virtual reality, high-capacity communications, satellite navigation and geographic information are supposed to be used.

It is expected to realize self-perception, self-diagnosis, self-decision and interaction through mobile equipments of railways, fixed infrastructures and related internal and external environment.
(3) Building intelligent high-speed railways

- Realizing intelligent construction, transportation and operation.

- Achieving goals of driving safety, improving transport efficiency, optimizing operation and management, improving service quality and saving more energy at low costs.
(3) Building intelligent high-speed railways

The intelligent service provides passengers with the services including ticket inspection when entering stations based on human image recognition, intelligent intra-station navigation, comfortable waiting, self-service ticket checking, safe boarding and quick exit, so as to realize intelligent passenger service.

Thank you for your attention!
分享经济背景下城市交通发展的路径选择
Path Options of Urban Transport Development under the Sharing Economy

吴洪洋 WU Hongyang
交通运输部科学研究院城市交通研究中心
CUSTReC, CATS

关于促进分享经济发展的指导性意见
Guiding Opinion on Promoting Sharing Economy

具体意见
Specific Opinions

分享经济在新的社会历史背景下，发展表现出新的趋势，新的组织结构，新的竞争方式。发展分享经济，更有利于社会的可持续发展。加快网络分享经济的发展，对于整体社会的发展和改善民生具有重要意义。
移动互联网在中国

Mobile Internet in China

截至2017年12月:
Until December 2017:

• 网民规模：7.72亿
Internet users: 772million

• 普及率Popularity rate：55.8%,

• 全球平均 (Global) : 51.7%

• 亚洲平均 (Asia) : 46.7%

The traditional forms of urban transportation are being replaced in the REVOLUTION

The traditional forms of urban transportation are being replaced in the REVOLUTION

Traditional forms

小汽车
Car

公交（含轨道）
Public transportation (including subway)

出租车、道路客运
Taxi and road passenger transport

公共自行车
Public bike

停车
Parking

New forms

分时租赁
Time sharing lease

定制小巴
Customized shuttle bus

网约车
Online car-hailing

共享单车
Sharing bike

共享停车
Sharing parking
一方群雄逐鹿！备受资本青睐！

- 网约车：滴滴、美团、神州、曹操、易到。。。54家
- Online car-hailing：DiDi、Meituan、Shou Qi、Caocao、Yidaos... 54家
- 顺风车：滴滴、嘀嗒、高德。。。40余家
- Carpool：DiDi、DiDa、Gaode... >40
- 共享单车：ofo、摩拜、哈罗、青桔。。。87家
- Sharing bike：ofo、Mobike、Halou、Green orange... 87
- 分时租赁：Car2go、Gofun。。。40余家
- Time sharing lease: Car2go、Gofun... >40

2017地球村里的共享单车
Sharing Bike in Global Village in 2017

- 全球注册用户总数：近4亿
  Registered users: 400 Million
- 累计订单115亿单
  Business Orders: 11.5 billions
- 全球服务25个国家, 304个城市
  25 countries, 304 cities
- 行业累计融资超300亿元
  Accumulative financing: 30 billion yuan
- 87家企业先后进入市场
  Enterprises: 87
- 单车投放总量达2500万辆
  Number of bicycles: 25millions
共享单车为我们带来什么？Contributions

城市日骑行订单量与拥堵延时指数分布

Urban Transport Efficiency improving: 15-19%

共享单车使城市出行效率提升15-19%！

共享单车为我们带来什么？Challenges

非机动车道非机动车道

新形态的出现不断给管理者智慧带来严峻挑战！

Challenges for the Decision Makers from the New forms
南京40%巡游出租汽车因缺少驾驶员而暂停经营;
Nanjing's 40% traditional taxis are suspended for lack of drivers.

武汉、福州、宜昌公共自行车停运;
Public bicycles in Wuhan, Fuzhou and Yichang are stopped.

全国道路客运、公交客运量持续下降;
The scale of bus passenger volume continued to decline.

道路客运公司受高铁、城际拼车影响纷纷倒闭
Road passenger transport companies have been closed down, which

如何对待共享出行新业态?
Attitude on the new form of sharing travel?

请为新业态的发展抬起那过时的栏杆！——人民日报
Open mind and positive attitude! ——People's Daily
如何对待共享出行新业态？

**Attitude on the new form of sharing travel?**

<table>
<thead>
<tr>
<th>2016</th>
<th>2017</th>
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<td>3月</td>
<td>4月</td>
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| 全国两会《政府工作报告》  
*Two sessions’ Report on the work of the government*  
《关于促进绿色消费的指导意见》  
Guidance on promoting green consumption | 《关于促进分享经济发展的指导意见》  
Guidance on promoting sharing economic development  
《推进“互联网+”便捷交通 促进智能交通发展的实施方案》  
To promote the implementation of the program “Internet plus” to promote the development of intelligent transportation and convenient transportation | 《关于鼓励和规范互联网租赁自行车发展的指导意见》  
Guiding opinions on encouraging and standardizing the development of Internet rental bicycles | 《关于促进小微型客车租赁健康发展的指导意见》  
Guidance on promoting healthy development of small mini bus rents |

要发展共享经济，让更多的人有平等创业就业的机会，使广大人民更好分享改革发展成果。

*We should develop a shared economy and allow more people to have equal opportunities for entrepreneurship and employment so that the wider people can better share the fruits of reform and development.*

——李克強 (*Keqiang Li*)
城际拼车
Inter-city Carpool

PK

道路客运
Road Passenger Transport

• 客运企业开展定制服务：15个省、2000余辆。江苏“巴士管家”、广东“淘巴士”
• 私人小汽车城际合乘：滴滴、嘀嗒、高德，2018年春节运送乘客超3000万
• 出租车开展定线城际客运：部分巡游车申请网约车资质
• 以汽车租赁形式开展城际客运：一些租车公司、违规争议

攀枝花——顺风车
Carpool in Panzhihua

198.8 元

确认发送

278.7 元

确认发送
### 政府

**Government**

- Develop a sharing economy and promote green transportation
  - Clarify development state and make good top level design
  - Improve management system and promote governance ability
  - Speed up formulation of standard and optimize standard system
  - Strengthen planning and construction and enhance weakness of the facilities
  - Improve supervision of deposit and prevent financial risk
  - Establish a credit system and enhance self-discipline consciousness
  - Strengthen propaganda work and promote social common governance

### 企业

**Enterprise**

According to the state laws and regulations and relevant regulations, operate independently according to market rules, and fulfill the responsibilities of the main body of operation and the corresponding social responsibilities.

### 用户与社会

**Users and society**

- Consciously abide by the traffic regulations, and joint participation in management,带动更多使用者。

### 社会共治

**Social multi-component governance**

- Develop a sharing economy and promote green transportation
- According to the state laws and regulations and relevant regulations, operate independently according to market rules, and fulfill the responsibilities of the main body of operation and the corresponding social responsibilities.
To improve the sharing economy development,

To promote urban green travel together!

- The sharing travel: towards intellectualization, orderliness and internationalization.
- Managers and practitioners need to face the future with a more open mind!
- There are still more innovations in the travel industry for aspiring people.

让我们为推动分享经济发展，

促进城市绿色出行携手共进！

To improve the sharing economy development,

To promote urban green travel together!
Current situation
Striving ahead and gaining brilliant achievements
### 砥砺奋进 成绩斐然

**Striving ahead and gaining brilliant achievements**

- **城市交通综合管理**
  水平显著提高 Integrated Urban Transport Management Improvement

- **交通有力支撑**
  城市经济社会发展 Strong support to urban socio-economic development by transport

- **城市交通基础设施**
  不断完善 Urban Transport Infrastructure Improvement

- **城市交通运输服务**
  能力持续提升 urban transport service improvement

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### 判断

**完善提升 时不我待**

Comprehensive Transport Improvement
当前，上海正处于创新驱动发展、经济转型升级的关键时期。上海“四个中心”和社会主义现代化国际大都市的定位和经济全球化、区域一体化、新型城镇化都对综合交通的发展提出了更新、更高的要求。同时，城市机动化和交通需求增长的趋势仍会延续。上海已明确提出规划建设用地“负增长”的要求，可供大量交通设施建设的土地十分有限。因此，未来五年，上海综合交通体系将逐步进入“完善功能、注重管理、提升服务”的交通设施建设和品质提升并重发展阶段。In the next five years, transport in Shanghai will step into the stage of emphasizing transport facility construction and service quality improvement.

到2020年，上海要在基本建成“四个中心”和社会主义现代化国际大都市的基础上，努力建设成为具有全球资源配置能力、较强国际竞争力、影响力的世界级城市群核心城市，特别是经济全球化、区域一体化和新型城镇化都对上海综合交通的发展提出了更新、更高的要求。

1、提升综合交通管理水平，进一步突出“智慧、低碳、共享”的发展理念。
Improving the management level of comprehensive transportation to further highlight the development ideas of intelligent, low-carbon, and sharing transportation.

2、坚持“管为本、重体系、补短板”，推进综合交通管理与创新。Promoting management and innovation of comprehensive transportation by sticking to ideas of basing on management, paying attention to the system, and improving weak links.
三

举措
Countermeasures
扬长补短 创新发展
Strengthening strong points, compensating for shortcomings, innovation, and development

Existing problems

严重拥挤高峰，地面公交吸引力低、换乘不便，公共交通整体服务水平和可靠性尚需提高；路网局部连通性不强，交通需求管理政策突破力度不足，道路拥堵形势依然严峻；现有交通管理手段在面对新型交通模式存在诸多不适应性；综合节减排技术和水平不高，资源环境承载力面临巨大压力；管理水平有待提升，信息化、市场化、科技化等手段的应用还不充分，交通运行秩序需要持续改善。

Existing problems: seriously crowded rail transit in rush hours, low attraction and inconvenient transfer of ground public transit; unreasonable functions and structures of road and highway systems, low local connectivity of the road network; inadaptability of existing transportation management means in the new transportation mode, low energy-saving and emission-reduction technologies and levels of the comprehensive transportation, and high pressures on the bearing capacities of resources and environment; insufficient application of information and technological means, and traffic order needing to be improved constantly.
扬长补短 创新发展
Strengthening strong points, compensating for shortcomings, innovation, and development

1. 完善城市交通基础设施功能
Consummating the functions of urban transportation infrastructure

2. 提升公共交通服务品质
Improving the service quality of public transportation

3. 创新综合交通管理模式
Innovating the management modes for comprehensive transportation

完善城市交通基础设施功能
Consummating the functions of urban transportation infrastructure

- 加快推进建设多层次轨道交通体系的建设，形成一网多模式
   Speeding up the construction of multi-level rail transport systems and forming a multimodal network

- 加快推进综合客运枢纽和场站建设
   Facilitating the construction of comprehensive passenger transportation hubs and stations

- 完善市域公路网络，加快新城路网体系建设
   Improving urban highway network and speeding up construction of road network in new urban areas

- 提升主城区的道路设施的服务功能
   Improving the service functions of road facilities in main urban areas

- 推进综合货运枢纽和物流园区建设
   Facilitating the construction of comprehensive passenger transport hubs and logistics parks
扬长补短 创新发展
Strengthening strong points, compensating for shortcomings, innovation, and development

1. 完善城市交通基础设施功能
Consummating the functions of urban transportation infrastructure

2. 提升公共交通服务品质
Improving the service quality of public transportation

3. 创新综合交通管理模式
Innovating the management modes for comprehensive transportation

提升公共交通服务品质
Improving the service quality of public transportation

- 轨道交通扩能增效，提高运营管理
- 优化调整地面公交线网
- 推进公交专用道规划建设和执法管理
- 提升公共交通服务的信息化和人性化水平
- 优化公共交通行业管理
- 拓展水上客运服务功能
- 探索出租汽车的管理新模式
扬长补短 创新发展

1. 完善城市交通基础设施功能
   Consummating the functions of urban transportation infrastructure

2. 提升公共交通服务品质
   Improving the service quality of public transportation

3. 创新综合交通管理模式
   Innovating the management modes for comprehensive transportation

扬长补短 创新发展

创新综合交通管理模式
Innovating the management modes for comprehensive transportation

1. 强化城市交通精细管理
   Strengthening the fine management of urban transportation

2. 规范发展交通新业态新模式
   New industrial activities and modes for transportation

3. 优化和完善交通需求管理政策
   Optimizing and improving management policies for transportation demand

4. 探索多元协同的交通管理新模式
   New transportation management modes with multi-subject cooperation
Thanks!
Transport Infrastructure (draft strategy)

Sustainable and Integrated Transport for Trade and Economic Growth in Asia

Asia is lagging and will see high demand ahead

Large demand that is still dominated by road transport

- Asia still lags significantly behind developed economies in transport infrastructure provision
- Regional needs are varied
- Total demand around $500-900 billion per year
- Three-quarters are for the road subsector
Several sub-sectors will see very high growth

### Large demand for aviation in China, India and Indonesia

**Forecast of passenger take offs**

- China will see more than 1 billion air passengers within a decade
- India aviation market will reach size of China’s 2015 market size in 2035

### Large demand for new rail and rail upgrading

**Rail electrification % in various region**

- China has shown how High Speed Rail can be viable even at relatively low levels of average incomes
- HSR will become increasingly deployed at high density corridors in Asia
- Electrification of networks will also see high demand

Long planning and preparation cycles

- Long planning, preparation and construction cycles
- Airports and rail take more than 60 months from planning to tender close
- Environmental, social, and land impact to be addressed
- Implies higher financing cost, and related risks around planning, construction, and market demand
- Needs various partners to work together, e.g., co-financing and risk mitigation
Need to manage demand shifts

Sensitive to demand and technology changes

Port sector has seen excess capacities in some regions

But ports in certain geographies and port upgrades will continue to be required

Electrification of cars (and autonomous driving), with shifts in shipping would also change infrastructure demand

Port Container Traffic and Capacity Projection (million TEUs)

<table>
<thead>
<tr>
<th>Region</th>
<th>Traffic 2013</th>
<th>Traffic 2030</th>
<th>Capacity 2013</th>
<th>Capacity 2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater China</td>
<td>400</td>
<td>350</td>
<td>200</td>
<td>250</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>300</td>
<td>250</td>
<td>150</td>
<td>200</td>
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<tr>
<td>North Asia</td>
<td>200</td>
<td>150</td>
<td>100</td>
<td>150</td>
</tr>
<tr>
<td>South Asia</td>
<td>150</td>
<td>100</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Middle East</td>
<td>100</td>
<td>50</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>Oceania</td>
<td>50</td>
<td>25</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>

With implications for AIIB strategy

- Prioritize “middle-range” projects with large economic impact and some financial returns
  - Make projects bankable with AIIB’s presence
  - Crowd in private capital
- Prioritize strategic connections
  - Trunk linkages
  - Cross border connectivity
  - Integration
  - Upgrading
- To remain flexible in addressing countries’ and clients’ needs
**AIIB’s Approaches**

**Ensuring Economic and Financial Sustainability**
- Rigorous cost-benefit and demand sensitivity analysis
- Build in maintenance cost

**Mobilizing Private Capital**
- Providing more support for PPPs, viability gap financing
- Playing the role of anchor financier

**Promoting environmental and social sustainability**
- Encourage “avoid, shift and switch” projects and project design to reduce carbon
- Maintain high ES standards, including enhancing safety and gender access

**Developing strategic partnerships**
- Work with regional initiatives to identify projects early
- Build up financing partners, including private sector

**Embracing innovative and proven technology**
- Spread green technology to Asia
- Improve infrastructure productivity (including use of ICT)

---

**Key AIIB Transport Projects to Date**

- **Tajikistan Dushanbe-Uzbekistan Border road**
  - Expansion of border connections
  - AIIB financed $24m

- **Pakistan M-4 Motorway**
  - Construction of M-4 Section
  - AIIB financed $100m

- **Oman Duqm Port**
  - Port and SEZ development
  - AIIB financed $265m

- **Georgia Batumi Bypass**
  - Bypass with highways, tunnels and bridges
  - AIIB financed $114m

- **India Rural Roads**
  - Rural roads in Gujarat, MP
  - ~$500m

- **India-Bangalore Metro**
  - Construction of Line R6
  - ~$335m
In developing countries, lack of infrastructure is a far more serious barrier to trade than tariffs - Joseph Stiglitz

Thank you.

Let’s Create Tomorrow.
Perspectives

- Recent Trends and Challenges for Urban Transport in China
- Emerging Policy Responses
- Lessons from International Experience
- Some High Level Conclusions

An external viewpoint

Update of 2006 ETC Paper

https://aetransport.org/etc/field/field-easy-pdf/etc-conference-papers/field-easy-pdf-29344
Recent Trends – Vehicle Ownership

- China is urbanizing rapidly – to 70% by 2025 with an additional 250 million urban dwellers from rural areas (25 million per year)
- At the same time, the economy is growing, diversifying and developing increasingly on market principles within a socialist context
- This is driving a major increase in vehicle ownership – 279 million (2017) nationally of which 194 million are private cars, up more than 300% in a decade
- This is matched by a sharp decline in historically high levels of walking and cycling linked to the Dan Wei (live-work unit) system which has now largely broken down
- For every 1000 households there are now 310 private cars, exceeding 600 in large cities (e.g. Shenzhen, Beijing) – 40 Chinese cities exceed car ownership of 1 million
- In per capita terms, many Chinese cities now exceeding 200 cars per 1000 people, on a par with New York, but well below most “mature” motorised economies (e.g. UK – 519)
- Taiwan, China’s closest cultural comparator, has car ownership of 310 cars per 1000 people, indicating a possible end range at “saturation” point
- Most cars powered by fossil fuels with only 528,000 (0.002%) driven by new energy sources (2014) although the latter is rapidly increasing
Recent Trends – Vehicle Ownership

Possible saturation point based on Taiwan Benchmark

United States - 910
Germany - 572
UK - 519
South Korea - 459
Taiwan - 310
China - 154
Singapore - 149
Hong Kong - 77

Implications

- Economy
- People
- Environment

- Overloaded Infrastructure
- Capacity Deficits
- Delay and Costs
- Traffic Congestion
- Safety and Security
- Reduced Life Quality
- Air Pollution
- Energy and Carbon
- Ecological and Severance

Tom Tom Traffic index (%)

7 out of top 20 cities for congestion

Road Accident Fatalities per 100,000 People

World Average
South East Asia
Russia
China
United States
Austria
UK
Sweden
The Challenge

- Many Chinese cities are on a “high carbon-emission growth path” in the face of massive demographic increase, economic development, pressures for modernisation of services and public expectations for mobility.

- In transportation terms, recent responses have focused on building extensive road networks to facilitate motor vehicle use, and very basic bus-based public transport, resulting in growing traffic, congestion, pollution and destruction of agricultural land.

- This has occurred at car ownership levels which are still low by international standards, but exacerbated by Government decisions to develop the motor vehicle industry as a “national pillar” of development and promote a domestic car market.

- Without urgent action, this path is unsustainable – and this is increasingly recognised.

Policy Drivers

**Top Down**

- Successive Five Year Plans and other directives towards supporting mass transit, public transport priority, urban traffic management and TDM.

- National initiatives (e.g. National Urbanisation Plan) to encourage eco-low carbon and sustainable development.

- Adjustment of Central Government responsibilities e.g. merger of Ministry of Construction and Ministry of Railways into Ministry of Transport, MoHURD.

- Initiatives to focus national level reforms at the city and local level e.g. NEV pilot cities.

- Programmatic initiatives from World Bank, UN-Habitat and other IFIs/NGOs to link loans and other support for infrastructure to complementary measures, including TDM and institutional reform.

**Bottom Up**

- Driven by emergence of pressing and unsustainable transport challenges.

- Diversification of transport systems towards multi-modal infrastructure and need for holistic management.

- Local dynamics, politics and leadership (e.g. Mayors).

- Horizontal and vertical integration of networks and functions towards common outcomes.

- Enacted in first tier cities – e.g. Beijing, Shenzhen, Shanghai – and some lower tier cities – e.g. Chengdu, Hangzhou.

- Disruptive innovators – e.g. dockless cycle hire (Ofo, Mobike), ride-hailing (Didi).

- Community interests and grass-roots towards people-centric planning.
Current 13th Five Year Plan (2016 – 2020)

- Give priority to public transport development
- Speed up development of urban rail, bus rapid transit and other forms of mass transit, including over 3000 Km of urban rail transit in cities of more than 3 million population
- Encourage development of eco-friendly transport
- Give impetus to development of online vehicle booking and customized transport services
- Ensure faster and smoother traffic flow
- Make progress in low-carbon transport, including energy-efficient and environmentally-friendly equipment
- Accelerate smart transportation, including advanced information technology and vehicle automation and Internet of Vehicles

Policy Responses: Public Transport

Huge investment in urban transit since 2010 under Central Government selection criteria

- **Metro** – 18 systems operational and 30 under construction
- **Bus Rapid Transit** – 18 systems operational

**Bus and Public Transport Priority**

**Current challenges**

- Sustainable financing of urban rail
- Variation in feeder systems, physical and operation integration
- Requirement to strengthen PT regulatory functions separate from operations
- Growth of app-based ride-hailing – Didi Chuxing – Opportunities and threats
- Matching transit with land use, including TOD for urban design and financing
Policy Responses: Air Pollution

- Transparency in air quality monitoring
- China spearheading the global transition for NEVs with road map to mass market of high performance at affordable cost
- Over 500,000 NEVs sold in China in 2016, more than Europe & North America combined
- Government commitment to technology and ecosystem focused on environmental and commercial objectives e.g. EV100
- Target for 40% of all vehicle sales by 2040, some cities planning for complete ban
- Variable progress in charging stations – institutional and regulatory weaknesses
- Some vehicle license quotas and number plate restrictions, but less progress on other measures (e.g. LEZ, Healthy Streets)
- Power generation and grid implications for NEV charging – 70% from coal-fired sources

Policy Responses: Transport Demand Management

- TDM policies increasingly articulated in terms of mobility for people, not vehicles
- TDM measures which direct target car use on the agenda e.g.
  - Vehicle License Quotas in Shanghai, Beijing, Tianjin, Shenzhen and Guangzhou
  - Number plate restrictions in Beijing, Hangzhou, Chengdu, Nanchang
- Other cities such as Wuhan and Chengdu have studied TDM, including road-space allocation, access controls, parking management and RUC
- However, implementation is less evident especially in lower tier cities – City leaders concerned with economic competitiveness and political unpopularity
- Plans for RUC in Beijing, Shanghai and Guangzhou studied but not taken forward
Policy Responses: Cycling Rennaissance

- Historically 60 – 70% mode share, but recent sharp declines in infrastructure
- MoHURD policy on walking and cycling
- First public bike share in Hangzhou in 2008, followed by private dockless systems e.g. Ofo and Mobike
- Cycling rates doubled and in Shenzhen said to replaced 10% of private car trips
- Increasing official recognition of benefits in terms of decongestion, health and environment
- Inconsistent response to manage “bicycle graveyards” and lack of investment in cycle infrastructure (Exceptions – Guangzhou, Xiamen, Hangzhou)
- Infrastructure for pedestrians neglected and limited application of concepts such as shared use and healthy streets

Studying Road User Pricing in Beijing (2008)

- Proposed as one element of wider TDM Strategy
- 2020 time horizon based on monitoring of network conditions and KPIs
- ERP technology with long-term GPRS/GPS
- Within 2nd Ring Road, extendable to 3rd
- Initial cordon charge of RMB 5 – 7 variable by time period and reviewed alongside other consumer prices
- Certain discounts and exemptions (e.g. disabled, public transport)
- Programme of complementary measures (e.g. traffic management) and revenue hypothecation
- Technology trials, strong programme and operational management
- Stakeholder consultation/political engagement
- Dramatic reductions in congestion feasible
- In reality, vehicle license quotas and number plate restrictions have been the main TDM measures
Policy Responses: Multi-Modal Integration

- Strengthening the Ministry of Transport
- Integrated Transport Strategies
  - White Papers and Comprehensive Transport Strategies (e.g. Nanjing, Shenzhen, Wuhan)
- Multi-modal integration
  - Hub stations and interchange design
  - Integrated ticketing and fares (e.g. Alipay)
  - Metro – BRT – Bike connections and incentives
- App-based smart transportation
- Transit-Orientated Development
- Early steps institutional reform
  - Strengthening Transport Commissions in key cities to integrate functions across modes
  - Separation and stronger regulation of public transport operators
  - Governance of data for network planning, operations and passenger information

The Case of Hangzhou, Zhejiang

- Plan for integrated and low carbon transport network to address congestion, energy consumption, emissions and noise associated with private car ownership in urban area of current 6.8 million, forecast 8.8 million by 2030
- Targets to increase PT mode share 50%, increase travel choice and reduce carbon intensity 50% in 2020 from 2005
- Development of metro (8 lines), BRT (18 lines) and water bus (3 lines) networks within a coordinated PT framework
- Non-Motorised Transport project focused on extensive public cycle hire and supporting corridors implemented according to a NMT Design Guide, the latter including pedestrian infrastructure and walkable streets
- “Zero Transfer Network” strategy to ensure seamless interchange between public transport modes, including T Card and Citizen Cards and focus on easy, convenient and safe physical interchanges at local and regional levels
- Pilot city for adoption of NEVs – through consumer subsidies, investment in bus fleet, development of charging infrastructure and free charging entitlement, aimed at building confidence as well as direct financial incentives
- Issues remain, for example on sustainability of NEV subsidies, and will need to be resolved as Hangzhou moves from successful experimentation to a mature integrated transport system that works in the long-run
- In 2017, UNWTO included Hangzhou as one of the World’s Top 15 Model Cities for Best Practices in Tourism
Benchmarking City Performance

Source: Arthur D. Little (2018)

The Challenge of Multi-Modal Transport

- Infrastructure and capacity
- Public transport priority
- Service planning
- Promotion & information
- Interchange
- Sustainable distribution

- Capacity planning
- Efficient Car Use
- Regulation
- Physical Restriction
- Intelligent Transport System
- Pricing

LAND USE
- Density
- Location
- Mix
- Parking Provision

MULTI-MODAL INTEGRATION

TRANSPORT SUPPLY
- Efficient Use Of Network
- Provides Capacity For Urban Growth
- Spatial Plan Provides Potential For Reduced Traffic Generation, Mode Shift And Sustainable Travel Behaviour
- Accessible Development Creates Demand Base And Planning Support For Alternative Modes

TRANSPORT DEMAND MANAGEMENT
- Efficient Use Of Network
- Provides Capacity For Urban Growth
- Spatial Plan Provides Potential For Reduced Traffic Generation, Mode Shift And Sustainable Travel Behaviour
- Accessible Development Creates Demand Base And Planning Support For Alternative Modes
The Challenge of Multi-Modal Transport

Success Factors for Integrated Transport Delivery

<table>
<thead>
<tr>
<th>Policy</th>
<th>Strategy</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Recognition of how transport links with economic development and land use and contributes to broader economic, social and environmental goals</td>
<td>• Collection and use of a range of supply and demand data to illustrate issues, develop future strategic options &amp; propose solutions which are effective, deliverable and value for money</td>
<td>• Recognition of inter-dependencies between all modes, including private and public transport, non-motorised modes and inter-modal and multi-modal integration</td>
</tr>
<tr>
<td>• Clear identification of current transport problems and issues and how these will change in the future</td>
<td>• Use of an analytical basis for understanding how transport demand and conditions might change in future and for appraising, selecting and prioritising various components</td>
<td>• Coverage of movement of freight as well as people and understanding of trade-offs to be made in allocating capacity between user groups</td>
</tr>
<tr>
<td>• Political leadership and priority assigned to the transport sector and the need for investment</td>
<td>• Development of a vision for transport which demonstrates a commitment to long-term planning</td>
<td>• Recognition of capacity enhancement (supply) to be balanced with TDM (demand) on basis of “carrot” and “stick” approach</td>
</tr>
<tr>
<td>• Development of a vision for transport which demonstrates a commitment to long-term planning</td>
<td>• A set of overarching policy outcomes, specific transport sub-objectives and quantitative targets</td>
<td>• A focus on policy and regulation, enhancing the efficiency of transport operations and maintenance as well as on investment in infrastructure</td>
</tr>
<tr>
<td>• A set of overarching policy outcomes, specific transport sub-objectives and quantitative targets</td>
<td>• Specific policies and proposals linked to different types of intervention with a holistic treatment of the supply chain</td>
<td>• Exploration of innovative approaches through use of technology, systems &amp; processes</td>
</tr>
<tr>
<td>• Specific policies and proposals linked to different types of intervention with a holistic treatment of the supply chain</td>
<td>• Clear identification of funding mechanisms, including private sector</td>
<td>• Inclusion of proposals for effective governance, resourcing, and management of delivery of measures, including institutional change where relevant</td>
</tr>
<tr>
<td>• Clear identification of funding mechanisms, including private sector</td>
<td>• Clear division of responsibilities for planning and delivery between a range of public and private sector agencies</td>
<td>• Recognition of risks in delivery and mechanisms for providing early indications and managing these risks;</td>
</tr>
<tr>
<td>• Clear division of responsibilities for planning and delivery between a range of public and private sector agencies</td>
<td>• Recognition of risks in delivery and mechanisms for providing early indications and managing these risks;</td>
<td>• Understanding of the need to be able to monitor progress with the ability to modify implementation programmes</td>
</tr>
<tr>
<td>• Recognition of risks in delivery and mechanisms for providing early indications and managing these risks;</td>
<td>• Communication of the strategy, and associated actions, in a comprehensive, accessible and well presented format</td>
<td>• Communication of the strategy, and associated actions, in a comprehensive, accessible and well presented format</td>
</tr>
</tbody>
</table>
Strategies for Low Carbon Sustainability

- No single solution – packages of measures
- Importance of small-scale interventions broadly applied compared to major projects with narrow geographical impact
- Design principles and guidelines e.g. shared streets
- Doubling up on benefits (e.g. Eco-driving – emissions and safety) to sell the message
- Importance of behavioural change alongside technology
- Role of Government in providing regulatory signals and standards

Eco-Low Carbon Urban Planning Methodology

- Prepared with funding from the UK’s Foreign and Commonwealth Office Prosperity Fund, co-funded by China’s Ministry of Housing and Urban Rural Development (MoHURD)
- Led by Atkins in close collaboration with the China Society for Urban Studies (CSUS)
- Based on both international and Chinese eco-low carbon (ELC) urban planning best practice, the methodology is aimed at providing clear, practical guidance for ELC urban planning in China, including implementation.
- Future Proofing Cities approach tailored for China.
- Applied on more than 50 projects in China.

ELC urban planning is aimed at broadening the scope of traditional urban planning to incorporate, as an integral part of the process, these three core objectives:

- Reducing greenhouse gas emissions
- Making more efficient use of natural resources
- Protecting biodiversity and the natural environment

Free download: www.atkinsglobal.com/fpc
Click Future Proofing China
Sustainable Transport Planning

- Overall carbon intensity and wider ecological footprint is influenced by transport mode and travel behaviour
- Transit-Orientated Development (TOD) for land use efficiency and encourages sustainable access
- Transport hubs anchor key neighbourhoods and determine land development density and patterns
- Road network is appropriate to demand, mode choice and reduces negative impacts of traffic

Key Principles

- Public transport system is multi-modal and developed to increase land use efficiency
- Eco-Low Carbon transport and non-motorized transport mode is utilized to optimize land use pattern and emissions, noise and severance
- Road hierarchy, local street space and appropriate density should be planned as continuous and accessible public space and quality public realm

Strategic Choices at the City Level

Scenario 1 – Car City
- Continue private vehicular investments
- No major public transit beyond bus
- No complementary measures

Scenario 2 – Car City + Metro
- Continue road investments as planned (e.g. Expressways)
- Metro and urban rail network
- Nominal bus and taxi service
- Limited integration and complementary measures

Scenario 3 – Smart Transit City
- Selective road investments as per Integrated Transport Strategy
- Optimized Metro network as per Integrated Transport Strategy
- Enhanced bus and taxi service
- Comprehensive NMT (Walking & cycling)
- Complementary measures, including focused TDM
- Intelligent Mobility, systems and data in infrastructure and operations
- Land use and public realm planning
### China – State of the Nation in 2018

<table>
<thead>
<tr>
<th>Mode/Theme</th>
<th>2006</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority Functions</td>
<td>Plan and Construct</td>
<td>Operate and Manage</td>
</tr>
<tr>
<td>Transport Network</td>
<td>Simple, Primary Modes</td>
<td>Complex, Multi-Modal</td>
</tr>
<tr>
<td>Urban Rail</td>
<td>√</td>
<td>√√√√</td>
</tr>
<tr>
<td>Road-Based Public Transport</td>
<td>√</td>
<td>√√</td>
</tr>
<tr>
<td>Travel Demand Management</td>
<td>X</td>
<td>√</td>
</tr>
<tr>
<td>Non-Motorised Modes</td>
<td>X</td>
<td>√√ (Cycling) X (Walking)</td>
</tr>
<tr>
<td>Integration</td>
<td>X</td>
<td>√√</td>
</tr>
<tr>
<td>Energy and Emissions</td>
<td>X</td>
<td>√√</td>
</tr>
<tr>
<td>Land Use and Planning</td>
<td>X</td>
<td>√</td>
</tr>
<tr>
<td>Institutions and Governance</td>
<td>X</td>
<td>√</td>
</tr>
<tr>
<td>Policy and Regulation</td>
<td>X/√</td>
<td>√√</td>
</tr>
</tbody>
</table>
Conclusions

ON THE ROAD to urban transport sustainability, China has come a long way ……..

BUT there is still some way to go ……..

MANY of the remaining challenges are not purely technical in nature ……..

THEREFORE making progress won’t be more of the same – what got you here, won’t get you there ……..

Conclusions

- Urbanisation in China requires a new type of multi-sectoral urban planning – Eco-Low Carbon Cities – and transport which is multi-modal, integrated and complex
- Acute urban congestion occurring in China even at internationally low levels of vehicle ownership, but scope for purely road-based solutions increasingly constrained
- Significant progress being made in urban transport with Central Government directives and local action, especially in investing in mass transit & increasingly NMT
- There are also a number of disruptive trends, for example cycle hire and ride-hailing
- More remains to be done, and it is not about doing more of the same
  - Mainstream successful experiments and bring all cities up to the standards of the best
  - Evolving from construction of infrastructure to complex operations, regulation and management
  - Focus on people (demand and customer needs) rather than infrastructure or vehicles (supply)
  - Reforms to transport governance, regulatory environment, financing and engagement of private sector
  - Embracing new, smart and disruptive technology with appropriate and proportionate standards and regulation
- Culture and mindset will be as important as technical skills and techniques
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Asset Management of World Bank's Investment and Financing Projects

ZHAI Xiaoke, Senior Transport Expert, World Bank

PRESENTATION NOT AVAILABLE FOR PUBLICATION
信息资源整合共享与大数据应用实践
Information Resource Integration and Sharing & Practice of Big Data Application.

交通运输部科学研究院
China Academy of Transportation Science
综合交通运输大数据应用中心
National Comprehensive Transportation Big Data Application Center
曹剑东
Cao Jiandong
2018年4月
April 2018

目录
Content
1 发展背景 Development Background
2 工作基础 Work Foundation
3 整合共享 Integration and Sharing
4 数据分析 Data Analysis
2015年8月31日, 国务院发布《关于印发促进大数据发展行动纲要的通知》 (国发〔2015〕50号): 建立综合交通服务大数据平台。On August 31, 2015, the State Council issued the Notice on Issuing the Action Plan for Promoting the Development of Big Data: to establish a comprehensive transportation service big data platform.
**Important Speech**

**Basic Tasks:**
Accelerate the improvement of digital infrastructure, promote the integration, opening and sharing of data, to ensure data security, accelerate the construction of digital China.

**Overall judgment:**
Big data is the new stage of informatization development.

**The application and development of information technology returns to the essence of “digit”**

**New Opportunities for Transportation**

**Digital economy**

**Governance system**

**Serving people’s livelihood**

**Transport Big Data**

Running networked VS management localization
实施国家大数据战略的“一号工程” Implementation of “Project No. 1” of the National Big Data Strategy

1. Integrated transportation decision support and evaluation center.
2. Integrated transportation operation coordination and emergency command center.
3. Comprehensive transportation administration office and service support.
4. Comprehensive transportation information resource sharing and opening hub.
5. Comprehensive transportation network security and operation maintenance support base.
国家综合交通运输信息平台 National Comprehensive Transport Information Platform

统一门户入口 Unified portal
统一地图服务 Unified map service
统一信息资源 Unified information resources

六个统一

统一基础条件 Unified basic condition
统一安全防控 Unified safety control
统一标准规范 Uniform standard

Part.2
工作基础 Work Foundation
工作基础 Work Foundation

综合交通运输大数据应用中心
National Comprehensive Transportation Big Data Application Center

工作任 责：work responsibility
 综合交通运输大数据政策标准研究
Research on the policy and standard of comprehensive transportation data
 数据资源目录编制和维护
Compilation and maintenance of data resource directory
 部级交通运输数据资源交换共享与开放应用平台开发、管理
 Development and management of ministerial data exchange, sharing, open and application system
 大数据技术研发应用及模式创新
Research and application of big data technology and model innovation
 大数据分析决策技术支持
Technical support for big data analysis and decision making

工作基础 Work Foundation

综合交通运输大数据应用技术实验室 Laboratory of Comprehensive Transport Big Data Application Technologies

研究方向：Research direction
 数据资源管理应用体系与相关标准规范研究
Research on the application system of data resource management and related standards.
 大数据动态采集、模型构建与处理技术研究
Research on dynamic collection, model construction and processing of Big Data.
 基于大数据的综合交通运输监测、分析评估与预警技术研究
comprehensive transport monitoring, analysis and evaluation and warning technology research based on Big Data.
工作基础 Work Foundation

我善治“数” We are good at data governance

研究经验：Research experience:

- 承担8个司局的统计工作，丰富的数据治理经验。
  Undertake statistical work for 8 departments of MOT, rich experience in data governance.

- 长期为经济运行分析工作提供技术支撑，丰富的数据分析经验。
  Long-term economic operation analysis work to provide technical support, rich experience in data analysis.

- 承担高速公路监测等工作，经常碰到“大”数据。
  Undertake highway monitoring and other work based on big data.

Part.3
整合共享
Integration and Sharing
政务信息资源目录  
Government Information Resource Catalog System

政务信息资源目录2017版：信息资源523项，信息项6934项。  
Government information resources directory 2017: information resources: 523, information items: 6934.

交换共享与开放应用平台  
Data Exchange and Sharing Application Platform

建设目标  Construction Objectives

➢ 建成交通运输行业数据资源中心。  
To build the data resource center in the transportation industry.

➢ 建成部省数据交换通道。  
To build a data exchange channel between MOT and the provinces.

➢ 建成部级数据开放共享主枢纽。  
To build a data sharing and open hub at ministerial level.
国家交换共享平台

Data Exchange and Sharing Application Platform

采用“1+34”部省共建的模式，21个省已启动建设。
With the model of "1+34", 21 provinces have started construction.

部门工程规模及工期
Ministerial Project Scale and Construction Period

- 工程计划总投资2199.34万元。工期24个月。
The total planned investment of the project is 21.9934 million RMB. The construction period is 24 months.

- 总投资不包含硬件购置费用。
The total investment excludes the hardware acquisition expenses.

- 根据部新要求，合同工期18个月。
According to the new requirements of the Ministry of Transport, the contract period is 18 months.
交换共享与开放应用平台 Data Exchange and Sharing Application Platform

建设内容 construction content

A. information resource catalog service  
B. Data exchange, sharing and open management  
C. Data quality assessment  
D. Platform maintenance management  
E. Data exchange sharing and opening portal.

资源汇聚情况 Resource Converge Situation

- 已完成近30家司局和技术支持单位的对接工作。  
  Nearly 30 bureaus have docked the technical support units.  
- 已完成219项信息资源的对接，其中170项信息资源1409712条数据记录入库。  
  A total of 219 information resources have been docked, of which 170 information resources 1409712 data records are imported into the database.  
- 外部委：工商总局法人库。  
  External ministry: Corporate Database from the General Administration of Industry and Commerce.
交换共享与开放应用平台  Data Exchange and Sharing Application Platform

数据资源共享服务  Data resources sharing service

资源目录管理  Resource catalog management

应用一：水运海事领域证照信息共享  Application 1: License information sharing in maritime field

实现船舶入级证书、国际船舶保安证书、船舶安全管理证书等16类水运领域证照信息共享  Implementation of ship classification certificate, international ship security certificate, ship safety management certificate and other 16 kinds of water transport license information sharing
交换共享与开放应用平台  

Data Exchange and Sharing Application Platform

应用二：信用信息资源共享 Application 2: credit information resource sharing

实现工商登记信息、双公示信息、黑名单信息、红黑名单等四类信用数据的共享。
Realize four types of credit data sharing: the business registration information, double publicity information, black list information, and red list information.

应用三：综合信息展示系统 Application 3: Integrated information display system.
Part.4
数据分析
Data Analysis
经济运行分析

从综合交通角度出发，利用高速公路收费数据，结合各种运输方式客货运量指数，经过季节调整、无量纲化、权重设置、指数合成，反映交通运输行业总体运行状况。From the comprehensive traffic angle, through the season adjustment, dimensionalization, weight setting, and index synthesis, the combination of highway toll data, and passenger volume and cargo volume indices in different transportation methods reflects the overall operation of the transportation industry.

行业景气监测指数

通过宏观及交通运输关联行业主要指标的发展变化态势，反映交通运输行业经济运行的景气情况、面临的问题，并对行业发展形势进行预警。The development situation of the main indicators of the macro and transport related industry reflects the economic operation of the transportation industry, the problems, and early warning of the development situation of the industry.

路网交通流量分布分析

动态反映全国高速公路分区域、分时段、分车型的车流量空间分布和变化情况，以及高速公路重要通道、重要节点交通压力，为效益评估、路网规划、道路拥挤度分析等提供支撑。Reflects the spatial distribution and change of the vehicle flow, and the traffic pressure of highway’s important channels and important nodes, provides support for benefit evaluation, road network planning, road congestion analysis and so on.
车籍地分布分析 Vehicle Registration place distribution analysis

动态分析本省籍车辆在全国的分布情况以及其他省籍车辆在本省分布情况，反映区域之间的经济联系情况，并为属地化车辆运输量、周转量的推算提供依据。

Dynamically analyzes the distribution of the vehicles from the province in the whole country and the distribution of the vehicles from other provinces in this province, reflects the economic relation between different areas, and supports the calculation of the traffic volume, and turnover volume of the localized vehicles.

高速公路收费数据分析及应用 Analysis and application of highway toll collection data

跨省流量流向分布分析 Cross - province flow distribution analysis

按照分区域、分交通运输通道、分收费站、分方向、分时间、分车型，分析车辆的流量、流向，掌握当前高速公路网客流、货流的方向性特征。

From the perspectives of different regions, transport corridors, toll stations, directions, times and vehicle models, analyzes the traffic flow and direction in order to master the characteristics of passenger flow and cargo flow of the expressway.
高速公路收费数据分析及应用  
Analysis and application of highway toll collection data

定期编制《高速公路运行月度监测报告》
Monthly Monitoring Report on Expressway Operation

包括高速公路上分区域、分流向、分车型的客车和货车的流量、运输量、周转量、货运密度、车辆行程等一共19张分析图表，以及对于旅客运输和货物运输情况变化趋势的分析。

Including 19 analysis charts on the passenger cars in different regions, diversions, and models, and traffic flow, traffic volume, turnover volume, freight density, and vehicle routine of trucks, as well as the trend analysis of passenger transport and cargo transport.

与高德联合发布《中国主要城市交通分析报告》
Joint release of China's major urban traffic analysis report
与百度联合发布《十一国庆中秋出行预测报告》
联合 rivew with Baidu on the Mid-A utumn festival travel forecast

预测全国及京津冀、长三角、珠三角、成渝四大城市群的收费站流量排名及去返程的易拥堵时间点
Forecast the toll station ranking of traffic flow and that of traffic jam time point in the whole nation and four big urban agglomerations—Beijing Tianjin Hebei, Yangtze river delta, Pearl river delta, Chengdu Chongqing.

预测全国最热门迁徙路线、热门目的地城市、繁忙机场和火车站
Forecast the country’s most popular migration routines, popular destination cities, busy airports and railway stations.

预测热门购物中心、热门奥特莱斯、热门步行街、大型演唱会
Forecast popular shopping centers, outlets, and concerts.

预测全国最热门景区、热度涨幅最大景区及热门骑行路线、热门游乐场
Forecast the most popular scenic spots, popular cycling routes and amusement parks.

编制并发布《2016年度高速公路运行大数据分析报告》
Publication and release of the Analysis report on the operation of Highway in 2016

高速公路收费数据分析及应用
Analysis and application of highway toll collection data

高速公路运行大数据分析
Analysis and application of highway toll collection data

总体运行
Overall operation

物流通道
Logistics

热点跟踪
Hotspot tracking

长江经济带
Yangtze economic belt

城镇群
Urban agglomeration

高速公路运行大数据分析
Analysis and application of highway toll collection data
大数据分析报告在新闻联播和央视新闻频道进行专题报道

The big data analysis report is featured in CCTV news channel.

高速公路收费数据分析及应用 Analysis and application of highway toll collection data

城市交通数据分析及应用 Urban traffic data analysis and application

- 联合高德地图发布《主要城市公共交通大数据分析报告》
  Joint release report with GAOGDE Map - "Public Transport Big Data Analysis report in the major cities of China "

- 摸清主要城市公共交通基础设施服务覆盖水平
  Figure out the coverage level of main cities' public transport infrastructure service

- 规范互联网企业对公共交通的评价口径
  Standardize the Internet enterprises on public transport evaluation
分享单车骑行水平评价

- 停车设施水平 20分
- 单车使用水平 20分
- 社会文明水平 15分
- 健康贡献水平 10分
- 节能减排水平 20分
- 服务环境水平 15分

六大骑行指数

与OFO联合发布《2017年中国主要城市骑行报告》

分析主要城市自行车停车设施水平和骑行环境，评价主要城市共享单车的骑行水平

城市交通数据分析及应用

城市交通数据分析及应用

- 共享单车出行特征分析

联合途歌科技发布我国首部针对共享汽车开展的大数据分析报告——《中国一线城市共享汽车出行分析报告》。

从诞生历程、用户画像、出行体验、社会价值等四个角度，全面分析了当前共享汽车发展的主要特征。
物流数据分析及应用 Logistics data analysis and application

智慧物流大数据发展综合评价 Comprehensive evaluation of big data development of intelligent logistics

全国智慧物流大数据综合指数 40.9
56.3 数据化发展指数
- 物流业务数据化程度相对较好
45.9 智能协同发展指数
- 物流业务协同化处于快速发展阶段
18.8 数据基础设施指数
- 物流数据云存储与计算处于起步阶段

物流时效性评价 Logistics timeliness evaluation.

2016年区域时效指数

全国物流时效性评价 National logistics timeliness evaluation.

中部地区相对2014年同比提高 10%
中部成为物流时效提升最快的地区

西部地区相对2014年同比提高 9%
东部地区相对2014年同比提高 6%

长三角地区继续保持领先优势，上海市、浙江省和江苏省位列全国前三
Jointly released the 2017 China smart logistics big data development report

Describe the overall blueprint of China’s intelligent logistics, point out the development trend of China’s e-commerce and intelligent logistics.

Thanks for listening
Exchanging knowledge and techniques on roads and road transportation

WORLD ROAD ASSOCIATION

www.piarc.org

A Rhode TRIP – Planning for the future of mobility in Rhode Island

From Providence to Beijing

XENOPHONTOS Christos Savvas
Assistant Director, RIDOT
A Rhode into the AV Future

RIDOT AT A GLANCE - RESPONSIBILITY
Manage the construction and maintenance for:

- 2,900 Lane Miles of State Roads and Highways
- 1,176 Bridges
- 777 Traffic Signals
- 100,000 Traffic Devices
- 2,500 Drainage Structures
- 5 Rail Stations
- 18 Park and Rides
- 681 Full Time Employees
A Rhode TRIP – Planning for the future of mobility in Rhode Island

From Providence to Beijing

The Future Is Here…

Transportation is Rapidly Changing Every Day

- Societal changes are driving mobility innovations
- New technologies are emerging at an accelerated pace
- Vehicles are rapidly becoming more connected
- Full autonomy is on the horizon, and we need to be ready

Rhode Island is Planning for The Future of Mobility

- Embrace innovation in transportation and other sectors
- Position the state as a leader on the cutting edge of progress
- Prepare to make best use of new and emerging technologies
- Integrate these changes into RIDOT’s infrastructure planning

How Will We Do It?

The Rhode Island Transportation Innovation Partnership
Rhode Island Transportation Innovation Partnership

GOALS OF TRIP

• Provide people with access to sustainable mobility options and get them to their destinations safely, reliably and efficiently
• Create a fertile ground in which the private sector can flourish in a responsible way and unleash new economic benefits

STRATEGY

• Establish and develop opportunities for innovation by connecting policymakers and critical communities of practice
  • Public Agencies
  • Private Sector Industries
  • Universities and Workforce Development Centers

REQUEST FOR INFORMATION ON CAV & INNOVATIVE TRANSIT SYSTEMS

• JUNE 2017 RIDOT Issues a Request for Information (RFI)
• 6 Areas of Interest
  • Opportunities for Partnership
  • Capital planning and infrastructure
  • Safety, Security, Risk and Liability
  • Environment and Sustainability
  • State Law and Regulations
  • Workforce and professional training needs within the State
Rhode Island Transportation Innovation Partnership

Opportunities for Partnership

• Explore how the state might effectively partner with private sector and/or other public sector entities and:
  • Identify opportunities for Pilot Programs
  • Create a complimentary environment for deployment with:
    • Nearby jurisdictions / other regions
    • Cities and municipal governments within Rhode Island
    • Academic institutions and technical schools
  • Data, data, data ... what to do with the data
  • Create and enhance opportunities for inclusiveness

Rhode Island Transportation Innovation Partnership

Capital Planning and Infrastructure

• Integrate the long-range capital planning process with the needs of new innovative transport technologies and needs for CAVs
• Identify what can/must be done now and immediate investments needed
• Prepare and implement an action plan that encompasses opportunities for public-private partnerships and partnerships with academic institutions
Safety, Security, Risk and Liability

- What are the challenges and opportunities that we are facing when it comes to safety, security, liability and risk as technology changes rapidly?
- Autonomous vehicles are considered inherently safer than human operated vehicles.
- Expectation however is that there will be a mixed fleet of vehicles on our roadways to about 2050.
- This creates a unique set of conditions that we need to study and better define as we move forward with the adoption of new technology.

Environment and Sustainability

- Link to opportunities for resource conservation, emission reductions, and overall environmental sustainability through innovation.
- Support improved access to all modes of transit that could lead to a safer, cleaner environment.
- New mobility paradigms and personal interaction with vehicles could impact environment.
- Impact of fuel saving technology to GHG emissions.
Rhode Island Transportation Innovation Partnership

State Laws and Regulations

• State and local laws may directly conflict with the nature of AVs.
• Currently federal government regulates vehicle safety and states regulate operators, traffic laws and insurance and liability
• Discuss how they could be structured to balance the needs of emerging technology with RIDOT’s core mission for providing improved travelers safety and mobility as well as private enterprise opportunity and prosperity.
• Define potential legal / liability issues
• Develop public policy to maximize benefits from deployment

Workforce Development

• Plan for the impacts of CAVs, MaaS, On-Demand Ride Sharing and Electrification on the workforce.
• Anticipate everything: negative impacts and potential job losses but also positive impacts and opportunities for job growth
• Identify how Rhode Island can best prepare to train its workforce to be competitive with the integration of these technologies
• Establish an action-oriented plan of what must be done now to be ready for this transition
Rhode Island Transportation Innovation Partnership

**PROOF OF CONCEPT**

- Conceptually propose a proof-of-concept or pilot CAV or on demand ride-sharing service deployment in any of the following locations or elsewhere in Rhode Island:
  - City of Providence Smart Transportation Corridors
  - City of Pawtucket
  - Quonset Business Park
  - University of Rhode Island Kingston Campus roadway network
  - Potential use of shoulders in interstate corridors

Rhode Island Transportation Innovation Partnership Expo

**The Rhode Island Transportation Innovation Partnership Expo**

**September 14-15, 2017**

- Interactive event where key stakeholders learned about the testing grounds for new and emerging technologies in panel discussion and site visits
- Attendees visited potential sites for RI’s smart corridors
- Discussions focused on infrastructure planning, workforce changes, best practices, and more
- The smallest state is the best testing ground!
Rhode Island Transportation Innovation Partnership

RFI 7553496: Submission Summary

- 30 responses from 28 different parties
- All respondents were private parties
- Submissions in the following areas:
  - Mobility
  - Safety
  - CAV Planning/Facilitation
  - Security
  - Environment
- AV manufacturing companies expressed interest (even though not all submitted to RFI)

WHERE ARE WE NOW?

WHERE are we going?
**The Path Forward**

**Pilot Projects**

**State Laws and Regulations**

**Capital Planning**

**ACTION PLAN**

**Safety, Security, Risk and Liability**

**Environment and Sustainability**

**Workforce Development**

**RIDOT's Efforts to Date**

- **April 2017**: RIDOT hosts International Mini-Summit on CAVs in Providence
  - Experts from WRA (PIARC) present what is being done in their countries
  - RIDOT establishes focus group
- **June 2017**: RIDOT issues Request for Information (RFI) on CAVs and innovative transit systems
- **July 2017**: The Rhode Island Transportation Innovation Partnership (TRIP) is established
RIDOT’s Efforts to Date

**September 2017:** TRIP hosts CAV Expo at The New England Institute of Technology

- Panel discussions focused on opportunities for partnership, infrastructure planning for CAVs, workforce development, environmental impacts, safety, mobility-as-a-service, and more
- Site visits in Providence, Pawtucket, Central Falls, Quonset, and URI

**October 2017:** RFI Closed & Reviewed

**November 2017:** RIDOT and URI host a joint research forum, *Transportation Innovation Partnership (TRIP): Leading the Way for Research*

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RIDOT’s Efforts to Date

**The TRIP Mobility Challenge**

- A pilot program to test automated, multi-passenger vehicles in Providence’s urban core

**GOALS**

- **Introduce** safe, innovative, high-tech, low-emission AVs to Rhode Island
- **Improve** transportation networks by connecting underserved neighborhoods
- **Integrate** cutting-edge tech into Rhode Island’s transit systems

**Request for Proposals (RFP) coming soon**

**More information** [here](#)
NEXT STEPS

REQUEST FOR PROPOSALS

RI TRIP
AUTONOMOUS VEHICLE MOBILITY CHALLENGE

QUESTIONS - DISCUSSION

Time for Feedback
Questions?

Grazie…
Gracias…
Merci…
谢谢

Thank you for your attention
一站式智能出行服务
One-stop Intelligent Travel Service

目录 Contents

1 城市交通面临的挑战
Challenges for Urban Transport

2 未来交通发展趋势
Development Trend of Future Transport

3 一站式出行服务
One-Stop Travel Service
### 城市交通面临的挑战之一：人口城市化聚集

Urban Transport Challenge #1: Urbanization of population

制图来源：世界银行WDI数据库

Data source: World Bank WDI database

#### GDP总量前四名国家历年人口城镇化率

Annual rate of population urbanization in the GDP top 4 countries

- 1994年，30%
- 农村人口迅速向城市聚集
- 城市交通问题逐渐凸显

#### 城市交通面临的挑战之一：人口城市化聚集

Urban Transport Challenge #1: Urbanization of population

数据来源：各地市统计局

Data sources: Local bureaus of statistics

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1 城市交通面临的挑战之二：有限交通资源优化组织

Urban Transport Challenge #2: Optimal organization of limited traffic resources
1 城市交通面临的挑战之三：资源环境的瓶颈制约
Urban Transport Challenge #3: Resource and environment bottlenecks

城市交通发展出形成两套解决方案
Two solutions for urban transport development

面向公众服务的交通体系
Transport system: Public service
- 轨道交通 Rail Transit
- 公共汽车 Public Bus
- 公共自行车 Public Bicycles
- 传统出租车 Traditional Taxi
- 租赁汽车 Car Rental

自助交通体系
Transport system: Self-service
- 私家车 Private Car
- 自行车 Bicycle
- 步行 Pedestrian
### 面向公众服务的交通体系
Transport system: Public service

- 经济实惠 Economical and practical
- 环保 Environment-friendly
- 周转效率高 High turnover efficiency

### 自助交通体系
Transport system: Self-service

- 服务舒适 Comfort service
- 门到门 “Door to door”
- 零换乘 Zero transfer

### 服务舒适性较差
Uncomfortable

- 无法提供“门到门”的服务 Could not provide “Door to door” service
- 需要等待和换乘 Wait & transfer

### 成本高
High cost

- 车辆、道路利用率低 Low utilization of vehicles and roads
- 不环保 Environment-unfriendly

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- 公共交通体系无法实现门到门、零换乘，服务水平低
- 人们生活水平提高，对于出行品质要求提高

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- 自助交通体系不断膨胀

- 城市交通效率降低

- 未来城市交通如何发展
2 未来交通发展趋势
Development Trend of Future Transport

在新技术革命浪潮的推动下，未来交通发展的趋势应当是技术和互联网的深度融合。
2 未来交通发展趋势
Development Trend of Future Transport

目前，世界各发达国家开始探索一站式出行服务，如美国、英国等。这些国家都是典型的交通强国。一站式出行是未来交通强国的重要标志之一。

我国在一站式出行服务方面具备一定优势：

China has the following advantages on One-Stop Travel Service

智能手机普及率高（72%）
High smartphone penetration rate

网约车、共享单车发展迅速
Fast development of ride-hailing and bike-sharing

移动支付技术先进
Advanced mobile payment technology

良好政策支持环境
Good policy support
3 一站式出行服务
One-Stop Travel Service

一站式智能出行的内涵：
The connotation of one-stop intelligent travel:

在深刻理解公众出行需求的基础上，将各种交通模式全部整合在统一的服务体系与平台中，从而充分利用大数据、机器学习、人工智能等技术，调配最优资源，规划最优路线，满足个性化出行需求的交通服务生态，并以一票制支付方式或包月套餐方式进行支付。

A transportation service system based on a profound understanding of public travel demand, integrating various traffic modes into a unified service system and platform, taking advantage of big data, machine learning, artificial intelligence and other technologies, deploying optimal resources, planning optimal routes, and meeting personalized traffic needs, paid by integrated ticket or monthly package.
### 3 一站式出行服务
One-Stop Travel Service

#### 场景描述:
由高铁站到会议地点，长距离

*Scenario:* Long distance from railway station to conference location

#### 个性需求:
尽快抵达会场

*Personalized Demand:* Arriving ASAP

#### 出行信息:
降雪天气，途径城区交通拥堵

*Travel info:* Snowing & Traffic Jam

#### 服务方式:
网约车、地铁

*Service mode:* Metro + Ride-hailing

### 城区交通拥堵
Traffic Jam area

---

#### 场景描述:
由住宅到公园，短距离

*Scenario:* Short distance from residence to park

#### 个性需求:
绿色出行，健身休闲

*Personalized Demand:* Green and healthy

#### 出行信息:
自行车道设置情况

*Travel info:* Bicycle path setting

#### 服务方式:
自行车、步行

*Service mode:* Bicycle + pedestrian

---

### 路线A：快捷
Rout A: Fast

### 路线B：舒适
Rout B: Comfort

---

### 路线A：绿色
Rout A: Green

### 路线B：快捷
Rout B: Fast
3 一站式出行服务
One-Stop Travel Service

3 一站式出行的主要特征
Main features of one-stop intelligent travel:

- **智能** — 以移动互联网平台的大数据资源、机器学习、人工智能等互联网技术为基础
  
  "Intelligence" — Based on Internet technologies such as big data resources, machine learning, and artificial intelligence on mobile Internet platforms

- **共享** — 注重出行服务的提供而非拥有车辆，乘客不仅是出行服务的享受者，也是交通数据的提供者与分享者
  
  "Sharing" — Focus on the provision of travel services; Users are not only the enjoyment of travel services, but also providers and sharers of traffic data

- **一体** — 各种交通方式进行高度整合，用户不再需要出行中各段的交通方式，并实现一票制或包月制的支付体系
  
  "Integrated" — Highly integrate various transportation modes; Users are paid with one-ticket or monthly package

- **人本** — 以人为本，给人们提供无缝衔接、安全、便捷、舒适和个性化的出行服务
  
  "Humanity" — Providing people with seamless connection, safe, convenient, comfortable, and personalized travel services

---

3 一站式智能出行服务
One-Stop Intelligent Travel Service

3 一站式出行平台的构成
Consist of One-Stop Travel Platform

- **多种类交通出行服务运营商**
  
  "Multiple types of traffic service operators"

- **一站式出行平台交通大脑**
  
  "One-stop travel platform (traffic brain)"

- **一票制支付清分结算系统**
  
  "Integrated-ticket payment clearing system"
3 一站式出行服务
One-Stop Travel Service

滴滴构建一站式出行平台
DiDi builds up One-Stop travel service platform

滴滴的愿景——成为全球最大的一站式出行平台
DiDi’s vision — Become the biggest One-Stop travel service platform around the world

持续推进各种交通出行服务线上化，平台上已有11种出行服务
Continuous promotion of all kinds of travel service online; There are 11 kinds of travel services on the platform

400+ Cities

4.5亿
注册用户
450 million
Registered Users

2017年滴滴平台累计分享座位10.5亿个

3 一站式出行服务
One-Stop Travel Service

在服务线上化的基础上，不断探索共享出行新模式
On the basis of online service, constantly explore new modes of sharing travel

分享车辆和座位
Sharing vehicles and sits

汽车服务运营
Vehicle service operate

- 开发顺风车、拼车等服务
- 通过分享座位，提升车辆和道路使用效率，培养共享出行习惯

- 发展服务，如顺风车和拼车
- 改善车辆和道路使用效率，通过顺风车提升出行习惯

2017年滴滴平台累计分享座位10.5亿个

In 2017, DiDi platform accumulatively shared 1.05 billion seats

- 家庭不再拥有小汽车，只购买出行服务
- 汽车服务运营商提供汽车出行服务
- 白天车辆高效率运营提供服务，夜间统一停放充电

滴滴成立了汽车开放平台, 已经运营超过20万辆新能源车

DiDi has established vehicle open platform, operating new energy vehicles more than 200 thousand
3 一站式出行服务  
One-Stop Travel Service

滴滴构建一站式出行平台  
DiDi builds up One-Stop travel service platform

建设基于大数据、人工智能技术的智慧交通大脑  
Construct smart traffic brain based on big data and artificial intelligence technologies

- 每日新增轨迹原始数据：超过70TB  
  Daily trajectory original data: more than 70TB
- 每日路径规划请求：200多亿次  
  Daily path planning requests: more than 20 Billion
- 每两秒做一次需求订单列表和可用司机列表撮合  
  Matching demand orders and available drivers every 2s
- 超过3000万个“推荐上车点（虚拟站点）”  
  More than 30 million virtual boarding points

个性化的出行需求  
Personalized travel demand

多种类出行服务供给  
Multiple travel services supply

3 一站式出行服务  
One-Stop Travel Service

滴滴构建一站式出行平台  
DiDi builds up One-Stop travel service platform

建设基于大数据、人工智能技术的智慧交通大脑  
Construct smart traffic brain based on big data and artificial intelligence technologies

- 高效匹配用户需求与出行服务供给，提升城市交通效率  
  High efficiently matching user demand and travel service supply, and improving urban traffic efficiency
- 为用户制定个性化、多组合出行选择方案，满足快捷、舒适、绿色等需求  
  Providing personalized and multiple combination travel plans; to be fast, comfortable and green
- 智能规划路径，优化城市交通组织  
  Intelligent planning path, and optimizing urban traffic organization
3 一站式智能出行服务
One-Stop Intelligent Travel Service

DiDi builds up One-Stop travel service platform

构建一票制支付体系
Establish Integrated-ticket Payment System

一票制支付体系是一站式出行平台的重要组成，是滴滴未来构建一站式出行平台的重要组成部分

Integrated-ticket Payment System is an important component of One-Stop Travel Platform

➢ 建立科学的清分结算系统
   Establishing a scientific clearing and settlement system

➢ 在行程结束后，用户在移动端进行一票制支付
   Users pay with integrated ticket at mobile after travel finished

➢ 包月套餐支付方式
   Monthly package payment
The cores of constructing One-Stop Travel Platform are to create users’ value, to make travel more convenient, to make city more accessible, to make the environment more sustainable, and to make our lives better.

In order to achieve this, we need to use our wisdom and strength together, and to start at the very beginning.

Let us work together and fight for it!
Reforming Transport Governance to Deliver Better Outcomes

Jonathan Spear
Director, Acuity
Beijing China
April 2018

The Challenge of Multi-Modal Transport
The Challenge of Multi-Modal Transport

The Issue

- Roads policy and planning needs to be placed in the context of meeting wider economic, social and environmental goals and delivering positive outcomes across all transport modes and land uses.
- A key aspect of this is strengthening multi-modal governance arrangements for transport policy, planning, delivery and operations.
- There is a need to establish how existing road administrations can work to achieve integration with other modes, networks and agencies to achieve common goals and better outcomes.
- In addition, there is a recent trend of creating (integrated) multi-modal transport agencies, long-established in many countries for public transport, but also now incorporating road and traffic functions.
- There is a need to establish the strength and nature of recent trends, which models are emerging and whether assertions of the benefits of revised multi-modal governance and joint working arrangements are supported by evidence.
- This debate is as relevant in China as elsewhere, especially as the Country moves from construction of primary transport networks to complex infrastructure and management across transport modes towards, especially at the urban level.
Dimensions of Transport Governance

**Modes/Themes**
- Strategic Roads
- Local Roads
- Traffic Management
- Rail
- Bus and Taxi
- Water Transport
- Non-Motorised Modes
- Demand Management
- Land Use Planning
- Maritime
- Aviation
- Freight

**Functions**
- Policy
- Strategic Planning
- Detailed Planning
- Design
- Construction
- Regulation
- Funding/Financing
- Operation & Management
- Maintenance
- Enforcement
- Monitoring
- Ownership

**Integration – Points of Departure**

One destination, but multiple routes?
World Road Association Research 2011 – 2015
(Technical Committee 1.1 Performance of Transport Administrations)

- Key trends in multi-modal transport planning and delivery
- Reflecting these trends in governance structures and processes
- Reasons and rationale for the trends observed
- Costs and benefits of multi-modal integration and related governance arrangements
- Wider factors behind effectiveness within and between organisations
- Lessons learned and recommendations
Survey Responses
25 Organisations from 18 Countries across the World

Survey Findings
Success factors for multi-modal planning and delivery

- Multi-Modal Mindset
  Organisational culture to consider all transport modes and networks, driving policy, planning, professional values and behaviour

- Objectives
  Specific objectives within organisational strategy to consider and integrate across modes and networks

- Roles and Responsibilities
  Clarity of organisational and departmental roles, feeding through to individual responsibilities and job descriptions

- Stakeholders
  Mechanisms and procedures to secure active consultation and involvement of all significant stakeholders, including those responsible for other modes and networks

- Customer-focus
  Strong customer and user focus to ensure customer satisfaction and wider public welfare and value around “whole journey”, irrespective of mode and network, promoting an externally rather than internally driven approach
Seven Detailed Case Studies

- A wide range of measures to promote multi-modal integration in place in policy, planning and delivery regardless of organisational form
- Interfaces between roads and public transport are considered to be particularly complex, significant and requiring specific focus
- Integration of national with regional/local networks is an additional level of challenge
- Even multi-modal agencies have internal organisational units focused on different modes and networks, requiring internal collaboration to achieve success
- The precise organisational form has limited relevance for the success of multi-modal measures, indicating that other factors are in play

Developing a Conceptual Governance Model

[Diagram showing parameters, planning and delivery model, and outcomes with specific elements like 'Customer Satisfaction', 'Efficiency', 'Effectiveness']
Toolkit for Multi-Modal Collaboration

Toolkit for specifying, coordinating and monitoring multi-modal actions

- Groups of actions derived from survey results
- Developing customer-oriented measures
- Actions for all organisational forms
- Coordination of actions
- Supports individual measures or broader packages of action

Four categories of actions

- Objectives and Strategy
- People, Values and Behaviour
- Processes and Systems
- Form and Structure

Framework of Objectives

- Common vision or objectives over set timescale
- Integrated Transport Strategy/Master Plan
- Aligning programmes and budgets with vision
- Monitoring delivery across organisations with shared KPIs for inputs, outputs and outcomes

Formal or Informal Agreements

- Agreement of common or consistent planning, design or operational policies and principles
- Agreements across transport providers to implement multi-modal actions at project level
- Can be informal, formal or contractually binding
Toolkit: Multi-Modal Collaboration
People, Values and Behaviour

Stakeholder and Communication Plan
- Stakeholder map and management strategy
- Common and integrated communication across organisations and stakeholders
- Branding of multi-modal initiatives to the public

Exchange of Knowledge and Experience
- Platforms and procedures for exchanging knowledge and different perspectives
- Shared approaches to professional development
- Secondment or role/job rotation between organisations

Toolkit: Multi-Modal Collaboration
Processes and Systems

Planning and Appraisal
- Unification or alignment of planning processes for various transport providers to optimise programme on multi-modal basis
- "Modally-agnostic" project appraisal techniques across all agencies
- Shared procurement and contracting

Shared data and IT
- Common and central data collection, analysis, storage and access
- Shared performance monitoring/management
- GIS
- Single Source of Truth on key data sets
Toolkit: Multi-Modal Collaboration
Function, Form and Structure

Central planning or coordination office or unit across modes and their respective agencies (e.g. Ministry PMO, CPO)

Shared organisation leadership or management

Partial Organisational Restructure
- Evaluating existing structures and making changes for multi-modal planning, while retaining distinct entities, functions and structures

Full Organisational Restructure
- Forming a joint structure where functions and organisations are merged or and management, staff and resources are integrated
- Creating a new multi-modal structure

Single or Multi-Modal Organisations

**Single Mode Organisations**
- Use domain knowledge specific to a mode or transport provider in best possible way
- Can act more efficiently and effectively within their structure

**Multi-Modal Organisations**
- Stronger strategic leadership
- Objective decision-making
- Modally agnostic
- Utilisation of synergies
- Potential to achieve financial savings
Key Points for Multi-Modal Transport Agencies

- A strong statement of leadership, public profile, integrated decision making & resource allocation
- A “single voice” (and brand) for the transport sector within Government, to stakeholders, public and supply chain partners
- Facilitating balanced decision making across all modes and networks in line with strategic transport vision and objectives
- Focus on whole, door-to-door journeys (including points of interface)
- Potential closer alignment with land use planning framework and wider policy priorities
- Organisational economies of scale
- Stronger purchasing power with suppliers
- Removes problems of possible gaps or duplication between modally-focused agencies

The Multi-Modal Approach

Success of the multi-modal approach in structural terms depends on:
- Supportive strategic conditions and a compelling technical narrative
- Political leadership and guidelines
- Local context and circumstances
- Weighing up of the costs and disruption of change vs. the benefits of reform

Implementation of multi-modal structures require:
- Proper consideration of all organisational options
- A robust implementation and change management plan
- Significant investment of time and resources
- Focus on changing organisational culture, mindsets and behaviours
- Consideration of residual functions and structures
Points of Departure

One destination, but multiple routes?

Critical Factors for Organisational Effectiveness

- Vision and Leadership
- Form and Structure
- Processes and Systems
- Capacity and Skills
- Values and Culture
- Collaboration
- Performance Management
- Integrity and Accountability
Some Observations on the China Context

- The rapid urbanisation and development of China poses mounting challenges for Government at all levels to manage the transport sector, deliver necessary infrastructure and services and support sustainable and integrated solutions.

- Transport planning, especially at the city and regional level, is moving from construction of primary networks towards physical and operational integration across modes as well as complex management from a users perspective.

- Urban regions may expand beyond administrative boundaries e.g. Yangtze River Delta, Pearl River Delta, Beijing-Tianjin- Hubei.

- Transport responsibilities are frequently scattered across a range of institutions, with mis-aligned goals, conflicting policies and inefficient resource allocation.

- There is also inconsistent involvement of the private sector, monopoly control and inefficient use of public funds, for example in urban public transport.

- There is growing recognition of the need for institutional reform, either through merger of functions to a unified structure or coordination across different agencies.

- If not tackled then institutional bottlenecks will impede cities' ability to develop economically or achieve environmental sustainability.

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Trends in Urban Transport in China

[Image: Graph showing trends in urban transport, with axes for Geographical Scope and Complexity, indicating a shift from present single solutions to future comprehensive solutions.

Source: Lulu Xue, WRI China (2015)
Division of Responsibilities for Chinese Cities

<table>
<thead>
<tr>
<th>Division</th>
<th>Road &amp; City Construction</th>
<th>Rail</th>
<th>Public Transport</th>
<th>Public Parking</th>
<th>Traffic</th>
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</thead>
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<tr>
<td>Planning and design</td>
<td>Municipal Party Committee &amp; Municipal Government, the National People’s Congress (NPC)</td>
<td></td>
<td>Department of Urban Development and Reform</td>
<td>Department of Urban Planning</td>
<td>Traffic Bureau</td>
</tr>
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<td>Investment &amp; financing</td>
<td>NDRC</td>
<td>NDRC</td>
<td>NDRC and Construction Commission</td>
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<td>NDRC</td>
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<td>NDRC</td>
</tr>
</tbody>
</table>

Notes: The highlighted yellow cells show the responsibilities of transportation commission in general cities (incompletely summarized);
1. Urban public transportation mode excluding rail transit;
2. Objectives, strategic planning and decisions for urban macro transportation development, such as White Paper on Transportation Development, and major transportation infrastructure investment & financing.

The Process of Institutional Reform

**Top Down**
- Adjustment of Central Government responsibilities e.g. merger of Ministry of Construction and Ministry of Railways into Ministry of Transport
- Successive Five Year Plans and other directives towards supporting mass transit, public transport priority, urban traffic management and TDM
- National initiatives to encourage development of electric and alternative fuel manufacturing sector
- Initiatives to focus national level reforms at the city and local level
- Programmatic initiatives from World Bank, IFIs and others to link loans for infrastructure to complementary measures, including institutional reform

**Bottom Up**
- Driven by emergence of pressing transport challenges
- Diversification of the transport systems, modes and management decisions required
- Local dynamics, politics and circumstances
- Focused on the horizontal and vertical integration of networks and functions with empowerment of an urban transport commission or equivalent body
- Enacted in first tier cities such as Beijing, Shenzhen, Shanghai and some second tier cities such as Chengdu and Chongqing
- No universal reform or single model across China
Shenzhen Municipal Transportation Commission

- Since 2001, Shenzhen has formulated an integrated transport management system, including roads, rail transit, public transport, ports and airports.
- Policy, planning, design, construction, operation, management are integrated.
- Structure combines decision making and direction under the Shenzhen Municipal Party Committee and Municipal Government, and implementation under Executive Board.
- This structure has integrated decentralised resources originally belonging to the Traffic Department, Traffic Police Department, Planning Department, Construction Bureau and other bodies.
- Increasingly, the Committee is also taking on functions of public transport regulation, licensing and monitoring whilst leaving service provision to the concerned operating companies.
- Non-strategic local issues decentralised to town and community level.
- The Committee has expanded its responsibilities beyond the original Special Economic Zone and increasing focus on Pearl River Delta.
- Coordination of data support and analysis is becoming increasingly important for making planning and management decisions.
Process of Urban Transport Reform (WRI 2015)

Step 1: formulating a series of measurable and feasible reform objectives

Step 2: conducting the top-level design of transportation management system

Step 3: implementing the reform

Step 4: accessing the reform effects and making adjustment

Considerations
- Unified Transport Strategy
- Aligned with Land Use
- Clarity and Hierarchy of Decision Making
- Appropriate Use of Market Mechanisms
- Separation of Planning, Regulation and Operations
- Alignment of Financial Resources with Functions
- Strengthening of Technical and Professional Capacity

Reform Conditions
- External Conditions (Development Stage, Diversified Network)
- Internal Conditions (Political Support and Sponsorship)

No “one size fits all” or “Big Transport Committee” solution in all instances – Strengthening of coordination mechanisms between agencies may be just as appropriate depending on local circumstances, benefits vs. costs, ambition or resistance to change and policy decisions.

Some Emerging Conclusions for China

- The importance of effective institutions for transport planning, delivery and management is increasingly recognised at the national and sub-national level
- Institutional roles and responsibilities need to align with strategic goals for city planning, economic development and urban transport networks overall
- Whilst institutional reform does not necessarily lead to a single unified agency for the management of multiple modes and functions, there must be at least inter-agency collaboration to implement solutions in a coordinated way (WRA Toolkit)
- Reformed transport institutions should have the financial and other resources necessary to carry out their role effectively (but realistically), including use of the private sector and ability to set user fees and charges
- Transport planning, regulation and operations should be functionally separated
- Reform should be accompanied by capacity building, skills and management incentives to ensure that institutions are equipped to achieve their objectives
- Initial reforms must be monitored for their impacts and adjustments made as needed to optimise effectiveness, efficiency and accountability
Developing and implementing transport programmes in the future needs to incorporate thinking and acting across modes and thematic agendas.

The “integration” role to plan, specify, monitor and review multi-modalism is needed (e.g. Ministry of Transport or equivalent) even if modal planning and delivery functions remain institutionally separate.

Multi-modal integration in organisational terms is feasible with:
- Informal agreements
- Formal partnerships and collaboration
- Structural merger and integration

Which approach is likely to be effective depends on a combination of technical, geographical, political and other context-specific factors – there is no one size fits all.

The process of institutional change itself needs careful management.

Alongside structural factors, it is important to consider “soft” aspects for processes, values, attitudes, mindsets and behaviours.

The Journey to Integration Begins in Our Minds
Jonathan Spear
Director Transport Policy and Planning, Atkins Fellow
E-Mail: jonathan.spear@atkinsacuity.com
The transport policy goals

The overall transport policy goal is to guarantee a socioeconomically effective transport supply system for citizens and the business community that is sustainable in the long term throughout the whole country

• Transport policy functional goal: Availability
• Transport policy consideration goal: Safety, environment and health
The Four-stage Principle

1 Rethink
Measures that can influence the need for transportation and choice of transport mode

2 Optimise
Measures that rationalise the use of existing infrastructure and vehicles

3 Rebuild
Limited reconstruction measures

4 Build new
New investments and major reconstruction measures

Sweden’s roads and railways

- 14 158 km of rail tracks
- 533 stations forembarking and disembarking
- 15 176 points
- 98 400 km of State roads
- 75 729 km of private roads with a State subsidy
- 16 500 way bridges
- 4174 railway bridges
- 41 ferry lines
- 42 200 km of municipal streets and roads
Major organisational changes in the transport sector

The Government’s reasoning behind establishing a multi-modal transport agency

- An approach that embraces all means of transportation
- A clearer customer perspective
- Strong regional ties
- A more efficient organisation
- To support innovation and improve productivity in the construction industry
The Swedish Transport Administration

Business volume in 2016
54 000 000 000
Of which
Investments: SEK 23.5 billion
O&M and traffic control: SEK 19.5 billion
Miscellaneous: SEK 11.0 billion

General organisation
Some strengths and weaknesses

• Increased possibility to make full use of the whole transport system through multi-modal planning

• Integrated planning of all transport networks makes co-operation with municipalities and regions easier

• Large-scale foundation for procuring can boost innovation and efficiency

• Large and complex organisation

Some strengths and weaknesses

• Single costumer handling

• Less administration - less overhead costs

• More attractive employer

• Co-ordinated research and development

• Cross-fertilisation of ideas and working methodologies between experts

• Much focus on rail...
Issues and Challenges during the change process

• High expectations among employees and other actors to solve complex issues
• Cultural differences between different single-mode agencies
• Short time from decision to implementation
• Operational issues to solve for more than 6000 employees

Lessons learned

• Reorganisation requires strong political commitment
• Affirmative attitudes among employees and external stakeholders a great advantage
• Operational issues when merging large agencies
• Different cultures both an asset and a challenge
• Reorganisation not sufficient, new mind-sets needed
In focus right now

Proposed National Plan for the Swedish Transport System 2018-2029

SEK 622.5 billion

- Development SEK 333.5 billion
- Operation and maintenance of roads SEK 164 billion
- Operation and maintenance of railways SEK 125 billion
- + SEK 90 billion from congestion taxes, loans, infrastructure fees, rail charges and other forms of co-financing
Our vision

Everybody arrives smoothly, the green and safe way

...Thank you!
National Outcomes

• Conversion to the world's first fossil-free welfare state
• Investment to increase residential construction
• Improve commercial conditions
• Be prepared and utilise digitization
• Strengthen employment
• An inclusive society
National Outcomes

Better public services
• Reducing welfare dependency
• Supporting vulnerable children
• Boosting skills and employment
• Improving interaction with Government
• Reducing crime

New Zealand Government

Agency Outcomes

Supporting economic growth
A safe and serviceable network
More free-flowing network
Improving the environment
Accessible and integrated network

• Boosting economic growth
• Building a One Nation Britain
• Improving journeys
• Safe, secure and sustainable transport
**Agency Themes**

- **Better roads for your money**
  ... because society needs to get maximum benefit from transport funding in Denmark

- **Safe and easy journey**
  ... because mobility contributes to growth and welfare

- **Joint solutions**
  ... because open dialogue and cooperation are the precondition for innovation and application

**DRD United**
... because the Danish Road Directorate is acting as one – working for road users, collaborators and the society

---

**Customer and network outcomes**

1. **Customer focused**
   Every customer experience will be seamless, intuitive and personalized by technology and live data.

2. **Successful places**
   By having a rail, road and rail network, we support the growth of communities, cities and the economy.

3. **Growing the economy**
   A transport system that delivers our vision will be transport oriented and provide economic, social and environmental benefits.

4. **Safety and performance**
   The transport network will provide services to every customer with efficient, safe and secure travel across a high performance network.

5. **Accessible services**
   Making it possible for everyone to get the most out of life, wherever you live.

6. **Sustainability**
   By delivering a more efficient network via delivery benefit for our environment, economy and wellbeing.

**The future of transport in NSW**

**Future Transport 2056**

**NSW Government**

**Transport for NSW**
Looking for common areas

• Often no connection between societal outcomes and transport outcomes
• No consistent approach to expectations
• But there are some common elements:
  - Supporting growth
  - Customer focus
  - Sustainable
  - Safe
**Value creation**

Value is not created by an organisation alone.  
- It is influenced by the external environment  
- Created through relationships with stakeholders  
- Dependent on various resources

---

**Integrated reporting**
International Survey Results

International Seminar 26 April 2018

International survey

International Region

Mode

- Other: 22%
- Water: 33%
- Public transport: 56%
- Road: 100%
- Rail: 48%
- Air: 44%

North America  Africa  Oceania  Europe
International survey

Have a Strategic Plan

- Yes: 90%
- No: 10%

Life of the plan

- 6+ years: 29%
- 3-5 years: 57%
- 1-2 years: 14%

Plan addresses

- Customers: 92%
- Network: 96%
- Org.: 85%
- Env.: 68%
- Human: 68%
- Social: 57%
- Economic: 71%

Plan measures

- Customers: 71%
- Network: 96%
- Org.: 83%
- Env.: 67%
- Human: 58%
- Social: 45%
- Economic: 79%
Addressed vs Measured

Alignment to Transport

<table>
<thead>
<tr>
<th>IIRC &lt;IR&gt; Capital</th>
<th>Transport Key Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human</td>
<td>People</td>
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<tr>
<td>Intellectual</td>
<td>Know how</td>
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<tr>
<td>Manufactured</td>
<td>Assets</td>
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<tr>
<td>Natural</td>
<td>Natural resources</td>
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<td>Financial</td>
<td>Financial</td>
</tr>
<tr>
<td>Social</td>
<td>Customers</td>
</tr>
</tbody>
</table>
Creating value

KEY RESOURCES AND RELATIONSHIPS

BUSINESS MODEL
We are one of the largest public road agencies in the world, responsible for more than 32,000 kilometres of road across Western Australia. Our key outcomes are focused on:
- Road Safety
- Asset Management
- Network Performance
- Value Realisation
- Internal Efficiency

RESULTS

To provide world-class outcomes for the customer through a safe, reliable, and sustainable road-based transport system.
Results focused

Benefits of this approach

• Longer term view of the business
• Business and customers understand
  - Relationship between financial and non financial in achieving performance
  - Impact of decisions on future direction
  - What they rely on to succeed
  - Where and how value is created
  - Fulfilling customer needs
Thank you
Institutional Integrity and Implications for China

Alexander Walcher, Managing Director of ASFINAG BMG
Michel Demarre, Director General of SEFI-FNTP

Beijing, China 2018

Agenda

• Some key definitions
• WRA/PIARC’s work on integrity
• The cycle of integrity
• Toolkit of integrity
• International developments after WRA/PIARC’s work
• Implications for China
• Conclusions
Some key definitions

**Corruption**
The misuse of entrusted power for private or corporate gain

**Transparency**
Clarity on the basic facts but also the mechanisms and processes leading to a decision

**Integrity**
Consistency between one's actions and one's principles and methods
Causes in the Infrastructure Sector

**Project**
- Contractual Structure
- Diversity of Skills
- Project Phases
- Uniqueness
- Lack of Transparency
- Physical Concealment

**National**
- Insufficient Reporting & Prosecution
- Lack of Government Policy Against Corruption
- Lack of Data on Comparative Costs

**International**
- Lack of Inter-Governmental Co-operation
- Lack of Pro-Active Steps by Funders
- Lack of Action by Local & International Actors

WRA/PIARC´s work on integrity
Questionnaire Survey - Key Aspects

- Reasons for corruption
- Legal requirements in place
- Management procedures
- Prevention of corruption
- Enforcement of corruption
- Whistleblower protection
- Future developments

Based on Technical Committee B.1 (Good Governance in Road Administrations) Working Group 1 (Integrity) 2008 – 2011
Conclusions on survey

**Recognition and increasing importance** of institutional integrity and tackling corruption activities

Already **high level of awareness** within organisations

Lower likelihood of occurrence and increased chance of detection through:

- improved working environment (satisfaction of employees)
- developed staff management, management systems, internal control / audit systems
- various internal codes of practice and guidance to employees

Measures at various stages of implementation in practice – more to be done:

- further reduction and prevention of corrupt activities in the long term
- coherent anti corruption measures are shown to be more efficient

**Cycle of integrity**
Toolkit of integrity

<table>
<thead>
<tr>
<th>Subject Areas</th>
<th>Measures</th>
<th>Description of Measures</th>
<th>Fully Implemented</th>
<th>Partially Implemented</th>
<th>Not Implemented</th>
<th>To be introduced</th>
<th>To be developed further</th>
</tr>
</thead>
<tbody>
<tr>
<td>PART A - MEASURES for the PREVENTION of CORRUPTION</td>
<td>Development of business ethics and anti-corruption strategy - awareness-raising and educational measures</td>
<td>Ethical guidelines</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ethics guidelines with summary of the organisation's mandatory legal, ethical, commercial and business practices in the areas of business ethics and anti-corruption applicable to all departments and all employees</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clear definition of what constitutes corruption and rules of conduct in the context of measuring personal and/or institutional behaviour</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Basic understanding of the organisation's ethics philosophy</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sources of further advice, information and support</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ethics workshops and other dissemination events</td>
<td>Regular completion of ethics workshops and other dissemination events for the training of employees and for the internal discussion of current issues, overview of the current regulatory framework and consequences (e.g., accepting gifts, damage to the organization, damage to other market participants)</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• Can be used as a checklist
• Organisation specific priorities
• Development and implementation plans
• Balanced relationship between prevention, identification and enforcement measures

Three-step-checklist for measures against corruption

- Overview of possible and effective measures
- Classified in sections of related measures
- Self-check: Necessity of introduction & development
International developments after WRA/PIARC’s work

- Alex mentioned a lack of inter-governmental cooperation, in spite of existing international rules:
  - OECD Anti-bribery Convention (1997)
- However, transparency and fight against corruption have been high on the agenda of many organizations since 2011:
  - G20
  - OECD
  - Multilateral Development Banks (e.g. World Bank)
  - Individual countries (e.g. France)
- New standards/laws/regulations aimed at both private & public sector
International developments after WRA/PIARC’s work

- TC A.1: Performance of Transport Administrations
  - Working Group A.1.3: Good governance and anti-corruption and response measures
  - WG A.1.3 terms of reference:
    - Outputs: ...... Link to external organizations that have looked at the issues

G 20 (1)

- Composed of the richest countries
  - South Africa
  - Canada, Mexico, United States of America
  - Argentina, Brazil
  - China, Japan, South Korea, India, Indonesia, Saudi Arabia, Turkey
  - EU, France, Germany, Italy, United Kingdom, Russia
  - Australia
- Meets each year in a different country
  - ... 2016 China – 2017 Germany – 2018 Argentina
- Initially set up to tackle the financial crisis, progressively extended to other topics, including transparency and fight against corruption
G 20 (2)

- Final communiqué of G20 Germany
  - High Level Principles on the Liability of Legal Persons for Corruption
    https://www.g20germany.de/Content/DE/_Anlagen/G7_G20/2017-g20-acwg-liberty-legal-persons-en.pdf?__blob=publicationFile&v=7
  - High Level Principles on Organizing against Corruption
    https://www.g20germany.de/Content/DE/_Anlagen/G7_G20/2017-g20-acwg-anti-corruption.pdf?__blob=publicationFile&v=7
  - High Level Principles on Countering Corruption in Customs
    https://www.g20germany.de/Content/DE/_Anlagen/G7_G20/2017-g20-corruption-in-customs-en.pdf?__blob=publicationFile&v=4
  - High Level Principles on Combatting Corruption related to Illegal Trade in Wildlife and Wildlife Products
    https://www.g20germany.de/Content/DE/_Anlagen/G7_G20/2017-g20-acwg-wildlife-en.pdf?__blob=publicationFile&v=5

OECD

- OECD is a kind of « Executing Agency » for G 20
- Increasing number of countries apply for OECD membership (e.g. Argentina, Brazil, Bulgaria, Croatia, Peru, and Romania)
- Even though China and other G 20 countries are not OECD members, they are often observers
- Abundant work on transparency and anti-corruption issues
- Plus: a number of OECD countries are toughening their anti-corruption legislation (e.g. France, so-called « loi Sapin II », with the creation of AFA: Anti-corruption French Agency)
Multilateral Development Banks (MDBs)

- Fight against fraud and corruption high on their agenda
- Cross-debarment between MDBs
- Increasing number of sanctions by World Bank, African Development Bank, etc.
- « Siemens Integrity Initiative » promotes projects around the world that seek to combat corruption and fraud, supporting educational and training programs as well as Collective Action; the World Bank has audit rights over the use of these funds (US$100 million over 15 years, beginning in 2009).

New International Standards

- ISO 37001 : « Anti-bribery management systems » (published in October 2016)
- More systematic, risk-based approach to anti-bribery, but the rationale is quite similar to the concepts developed by WRA/PIARC in TC B1
- Applicable to all types of organizations: public, private and not-for-profit, which should all develop risk assessment and related due diligence
Implications for China

• China is deeply involved in the fight against corruption at international level
• At UN level: e.g. ongoing work on « Zero Tolerance Approach to Corruption in PPP procurement » (Public-Private Partnerships)
• China is a member of G 20
• China was a member of the ISO 37001 Committee, and wants to be more and more involved in ISO/TC 309 « Governance of organizations »

Conclusions

• We have witnessed a huge progress since 2011, with more and more countries and international organizations not only agreeing to fight against corruption, but also putting new tools in place
• WRA/PIARC is highly commendable for putting this topic in their strategic agenda as early as 2008
• Congratulations to the forerunners of Technical Committee B1!
Disrupting the Transport Sector through Technology and Innovation
Beijing, 26th April, 2018

dr. ir. Anne-Séverine Poupeleer

Content

- Changes
- Fast changing world
- Open for new ideas
- Evolution in transport sector
- Projects
  - Mobil 2040, city of Brussels
  - Ring R0 around Brussels
  - De Lijn – public bus transport in Flanders
- Conclusions
1. Changes

link with TC A.1 ‘Evaluation of the transformation of road administration’

COMMUNICATION is important!
Changes are never easy!

Model for a change process

**STRUCTURED 10 STEP CHANGE PROCESS**

1. Identify or Confirm the Need for Change
2. Describe Objectives and Desired Outcomes
3. Develop and Evaluate Change Options and Constraints
4. Develop Change Proposals and Plan
5. Secure Approval, Leadership and Resources
6. Communicate Plan by Impact, Influence and Interest
7. Implement Plan
8. Monitor and Evaluate Implementation
9. Refine Plan & Implementation in Light of Initial Experience
10. Confirm Impacts for Objectives & Continuously Improve

**INPUTS**
- External Drivers
- Internal Performance
- Customer Requirements
- Stakeholders Expectations
- Constraints & Practicalities

**DIMENSIONS OF CHANGE**
- Mission and Strategy
- Form and Structure
- Process and Systems
- Resources and Skills
- Leadership
- People and Behaviour
- Engagement and Partnership

**OUTCOMES**
- Level of Service
- Products
- Customer Satisfaction
- Value for Money
- Sustainable Organisation
2. Fast changing world

INNOVATION

DOING THE SAME THINGS A BIT BETTER

DISRUPTION

DOING NEW THINGS

MAKING THINGS THAT MAKE THE OLD THINGS OBSOLETE

MINDSET
Digital technology
First digital camera in 1975 by Kodak engineer Steven Sasson

Replacing old technology & impact on organisational-model and eco-system of Kodak – Willy Shih

Impossible to focus on the new business

Sometimes the world is changing so fast, that we do not (want to) see it!

Growing is jumping into the unknown like a child
Quick changing world

Looking for new opportunities

Other eco-system?
3. Open for new ideas

Think out of the box

Innovation labs

Forget how things work

Rules? No shine, without friction!
3. Open for new ideas

KNOWLEDGE CELLS

- e.x. Minister of mobility and transport works of Flanders

What? Strategic ‘think tanks’ ➔ long terms plans

Who? Different experts from several agencies of different modes; workshops

Boundaries? No rules

How? Thinking out of the box, innovation labs, …inspiring speakers, ask many questions,…

Basis? Information, study, analysis,

=> Pilot project

4. Evolution in transport sector
A highway in **2000**...

---

**4. Evolution**

A highway in **2020**...

---

**A new ecosystem**

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Source:
Xavier Tackoen
CEO
Espaces-Mobilites
Carpooling ➔ Sharing!

BlaBlaCar is an online marketplace for carpooling. Its website and mobile apps connect drivers and passengers willing to travel together between cities and share the cost of the journey. The service is available in 21 countries (Spain, Portugal, France, Italy, Belgium, Luxembourg, Holland, Poland, UK, Russia, Ukraine, Germany, India, Turkey, Hungary, Croatia, Serbia, Romania, Slovakia, Mexico, and Brasil,…)

A European phenomenon

At the current growth rate, BlaBlaCar will transport more people in 2 years than the biggest US airline

Long distance buses
Long distance buses

Office buses
Office buses
Cycle highways

- Climate Change / Environmental Sustainability
- Technological advances
- Multimodality
5. Projects

[a] Brussels – MoBil 2040

Mobil2040 proposes new transportation options

For example the urban cable car. Transportation by cables is less expensive, easily constructed, and rather practical when you think about all the existing obstacles like waterways, highways, railway tracks...

Source: VO citizens
**Avenue Louise**

Discover today’s Avenue Louise and Mobil2040’s version in several years. The people are taking over the streets.

Source: brussels-of-the-future-mobil2040

---

**The Bourse**

The project highlights the pedestrian area around the Bourse and is not unfathomable. Bikes, trams, and metro fill the urban space, creating a completely re-imagined city center.

Source: brussels-of-the-future-mobil2040
Etterbeek Train Station

Yes, you are correct – what you see below is the intersection of the Avenue de la Couronne and Boulevard Général Jacques. Less lanes for automobile traffic, more space for green transportation.

[b] Brussels – ring R0
[b] Brussels – ring R0

Preference for environmentally friendly modes of transport!

40 km cycling paths
20 km parallel roads
10 km tram lanes
Eco connections

[c] Self-propelled buses in 2020

De Lijn a public transport company in Belgium is working together with Brussels Airport on a pilot project with self-propelled electric buses
Advantage for the government:
- Increased safety
- Better use of open space
- Better use of available time
- Use of new technology
Échanger connaissances et techniques sur les routes et le transport routier / Exchange knowledge and techniques on roads and road transportation

**Evaluation and end pilot project**

...if necessary
6. Conclusions
to... Road as a Service (RaaS)

Mobility as a Service (MaaS)
Roads ("tunnels")...in the air?
Go for the changes!

“If you let go, you have two hands free!”

“The best way to predict the future is to create it.”
Abraham Lincoln
Thank you for your attention!

Questions or ideas?
ITS for Safety and Sustainability
应用智能交通技术提升安全和可持续发展

S.K. Jason Chang
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Professor, National Taiwan University
Vice President, ITS Taiwan
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Agenda 報告大纲

- Background 背景
- ITS Development in Taiwan 台湾智慧交通发展
- Future Mobility and ITS²+1 未来行动力
- Concluding Remarks 結論

ITS in Taiwan & Taipei 台北智慧交通

- **Taipei**: 3,000 sq km, Pop 7 m
  - Car- 2.5 m, Motorcycle-3.2 m
  - MRT 136 km + BRT 60 km
  - Bike Sharing: 33,800 bikes w/ 820 stns

- **Taiwan**: 36,000 sq km, Pop 23 m
  - Car- 7.2 m, Motorcycle- 13.8 m
  - Mobile phone penetration rate: 113.2% (SP: 80.2%)
  - 100% e-Bus; 94% e-tag car; 92% e-payment; 75% e-Taxi
  - 18/22 Cities with Traffic Control Center

- Freeway: 1,000 Km, ETC- All MLFF Distance-based Charge and Smart Control Centers

- High Speed Rail: b/w Taipei and Kaohsiung (345km) 90 min

**ETC and eTag**
Far Eastern ETC
多元整合出行服務之基礎建設

Smart Taiwan 智慧城市

National Plan
Digi + Intelligent Community

source: Intelligent Community Forum (ICF)
Information Sharing and Service Platform of Public Transport Systems

Public Transportation Information Sharing Platform

Smart City Award
- MOTC
- iisi
- Big Data Innovation
- APTRC, NTU

ptx for Value-added Services

Google, DOITWELL, Traf, BusComing....

Official Website

ptx.transportdata.tw

MaaS
- Past N-N
- Now N-1-N
BIG Transport Data Sharing for Innovative Services

**Strategic Goals**

- Service Quality for Passengers 服務品質
- Productivity of Operators (efficiency and cost) 運營效率
- Decision Making決策品質
- Research & Innovation 研究創新
- Economy Benefits 經濟效益

**Two-Wheeler Safety**

**On Motorcycle**
- Use sensor and active RFID to broadcast the position

**On Car**
- Receive the advise from roadside smart pillar
- Predict the motorcycle behavior (Intelligent ADAS)

**Roadside Smart Pillar**
- Sensor fusion technology to detect motorcycle behavior (not only detect the object)
- Use Edge computing to estimate the dangerous case
- Report traffic condition for traffic management

- Rider assistance and position
- V2X/ IoV
- Riding record
- ADAS (radar, camera...)
- Road conditions sensing and sharing
- Elock system
- Energy management
ITS Plan 2017-2020 四年發展方案
IT5S- Safe, Smooth, Seamless, Sharing, Sustainable

• US$100 Million New Fund for ITS Development 2017-20
  – Smart Road Safety Program
  – Smart Corridor Management Program
  – Rural Area ITS Applications
  – Mobility as a Service (Two Demonstrations)
  – Connected Vehicles and Automated Vehicles
  – R&D

  KPI: Traffic accident: -20%; Congestion: -25%; Public Transport: +20%; Accessibility in Rural Areas: +25%; Industry Output: + $10bi

Institute of ACE Vehicles 成立ACE研究中心
Impacts of Autonomous Vehicles

How about Shared Autonomous Electric Vehicles?
BBMW w/ TOD+ICT for Livable Taipei

台北綠色出行與宜居城市

- Integration of Bike, Bus, Metro, Walk and Sharing through land use, urban planning, urban design, and ICT

Public Transport + Active Mobility + Sharing

公共交通 + 慢行交通 + 共享交通
Taipei Policy: Safe, Green, Share, Smart
台北交通政策：安全、綠色、共享、智慧

Smart Sharing Systems of Bike, Scooter and Car 智慧共享系統

YouBike

U-Moto

U-Car

gogoro

• Priority: Poor MRT coverage area and parking supply shortage districts
• Electric motorcycles
• gogoro and WeMo

source: Zipcar

source: car2go

• Coordinate with car purchasing limitation and public housing
• Rental stations at public housing and public parking lots
• Electric vehicles/ Personal Mobility Devices
ATIS, ATMS, APTS and Smart Parking

Multi-Smartcard Integration
Island-wide tour just one card in hands

Travel Information Services
Form a mobile phone APP upsurge

ITS Deployment
Bus Real-time Information
More than 30 million queries/month for Taipei City

Public Transit Data Exchange Platform
Build up an open data model
Smart Terminal

- PPP TOD Project
- Headquarters, Shopping Mall, Department Store, Hotel...
- Multimodality: Metro, Freeway Bus, City Bus, Taxi, Car Parking...
- ICT Applications for Passengers and Visitors

Open Test Zones for Trials

Autonomous Vehicles
Real Challenges!
真正挑戰

Push & Pull Policy 推拉政策

Clear Policy and Management:
- TDM
- No Free Parking
- ATIS, ATMS
- Behavior Change
- e-Enforcement
Role of ITS on Future Mobility
智能交通技術角色：提升交通安全、促進可持續發展
Intelligent Transport for Safety
Intelligent Transport for Sustainability
Integrated Transport Solution

ITS$^2+1$

Case Study for Smart Mobility智慧出行案例
The Shortest Path based on Historical or Real Time Information

1. Travel Time: 35 MINS + 2 MIN WALK
   Parking Lot: A12 $6/hr

2. Travel Time: 33 MINS + 6 MIN WALK
   Parking Lot: A10 $4.5/hr

We have other smart choices with ITS technologies

TRIP PLAN TRAVEL TIME PREDICTION
THE TRIP PLAN IS BEING PROCESSED...

1. MRT 22 MIN + 9 MIN Walk
2. BUS 26 MIN + 4 MIN Walk
3. AUTO 28 MIN + 10 MIN PKG
4. Car Pool 27 MIN + 7 MIN Wait
5. Taxi Pooling, Public Bike, Sharing...
OR, you may select a taxi (or sharing)
Web Taxi or Cloud Taxi......出租車、網約車

3. TAXI

- 4 MIN Arrival
- Fare $12
- 28 MIN
- Excellent Service

NO, I would like to have my car!
若仍選擇開車... 能源、環境、安全風險

Still Car?

**YES**

You will consume $4.5 gas and have GHG emission 2kg Plus 0.02 fatality and 0.11 injures.
Have a Safe and Green Journey

安全綠色出行... 付出代價

Still Car?

YES ☑️ NO

Pay $7.5 Eco-Charge and Have a safe & Green Journey

OR, I have changed my mind...

改變主意....

Still Car?

YES ☑️ NO

Great! Your discounts
1. 30% Public Transport
2. 20% Taxi Pooling
3. 15% Car Sharing
4. -$10 for Public Bike
Intelligent Transport for Safety and Sustainability 聰明出行選擇

- Digital Infrastructure for Smart Choice
  Travelers make the best choices on departure times, modes, routes, and destination with the real time and intermodal information as well as appropriate tax/pricing schemes with considering external effects of safety, environment and public health.
- Smart Travel and Sustainable Mobility

Concluding Remarks總結

- Smart Mobility for Livable Cities: Quality of Life and Economy Growth
  智慧交通for宜居城市：提升生活品質、促進產業發展
- ITS$^2+1$: Safety, Sustainability and Integrated Solution
  智慧交通發展目標：安全、可持續＋整合方案
- Institutional Reform and Innovative Governance
  管理体制和機制創新
- International and Multidisciplinary Collaborations
  共同跨域合作
Even though we, the foreign members of PIARC TC A.1, came to the P.R. of China (PRC) as experts, we leave with more knowledge and very impressed with the continued progress of the PRC regarding infrastructure and network transformation and the will to continue improving the organisations and performance in the countryside, mega cities and small/medium cities all over China.

The exchange and sharing of knowledge and information benefits all of us, and has direct impact on our customers as we all become better professionals through this knowledge.

The members of TC A1 came away from the Seminar with six (6) major conclusions:
CONCLUSIONS AND TAKE-AWAYS

1. Roads are not just a physical asset (infrastructure) but we must start looking at them as a service, “Road as a Service” (RaaS) and part of the “Mobility as a Service” (MaaS) equation. The road network is an economic and social asset. There has been a great leap forward in infrastructure and modernisation and reform of government agencies and the focus on transportation and the sharing economy. There is also a recognition that Transport Administrations need to take a customer-centric approach to providing transport services and consider the entire journey not just one aspect of it.

This has included recognition of the need to adapt to social needs and improving the quality of life of citizens through the built environment and promoting environmentally friendly modes of transport including cycling and walking.

2. Good planning across the modes and between agencies, and collaboration between agencies, Central Government directives and local actions and communication, open for new ideas, with long term views of the business is essential:

There is a common desire around improving freight and logistics and enhancing the movement of freight to get better efficiencies. There is also a need to redefine the role of ITSs to include Safety, Sustainability and an Integrated Transport Solution and move to « ITS 2+1 ».

There is a strong focus on reform for the future with metro or urban areas focused around looking for a seamless transport network, creating better urban economies and smart and liveable cities.

The high-speed rail in RPC: such a big building program of this nature would be a dream come true, creating the “fast” future.
CONCLUSIONS AND TAKE-AWAYS

3. There should be no fear of new ideas and disruptive trends and no more doing more of the same. Embrace innovative services and new business models:

We must innovate in order to stay relevant to our customers and provide them with world-class service.

There is a strong need to focus on smart transport, ITS, CAV, cycle hire, ride hailing, green transport, integrated transport and revitalised rural areas through transport.

All of this must be done in a fair market environment and with institutional integrity, reporting and focused towards the customers’ needs and service quality for passengers. All of this is based on research and innovation and being open minded.

4. The sharing economy is coming, and we need to embrace it openly so that we can be stronger together in order to deliver the outcomes of joint promotion and prosperity.

There is a great desire to achieve positive outcomes with “open data” but it’s a difficult task. We are all at the beginning of that process, to share so much data from so many different systems and sources and achieve harmonisation.

Significant difficulties to bringing together the public and private or self-service sectors for outcomes as “one stop service” and “one stop platform” still remain in place.
CONCLUSIONS AND TAKE-AWAYS

5. Much remains to be done – the outcomes of tomorrow are determined by the choices we make today:

Evolving from construction to complex operations, regulation and management. Institutional reform and innovation with clear objectives.

Reforms to transport governance, regulatory environment, financing and engagement of private sector, creating value chain, and embracing disruptive technology with appropriate standards and regulations.

6. The nearby future:

Be part of the global logistics network and the interest in having China being more involved in influencing the transport solutions for the world in a strong and positive way.

Bringing professionals around a table for sharing ideas builds lasting goodwill and friendships that transcends boundaries and nationalities.

We have a lot to learn from each other. As a collective, we have the opportunity to do great things. Let us build on the good work we have seen today in a positive manner. There is no need to reinvent the wheel.
CONCLUSIONS AND TAKE-AWAYS

AND NOW, THE PASSING OF THE TORCH:

We are happy to announce that while attending the Seminar in Beijing, the City of Kiev has joined WRA/PIARC as a regional member and they will be hosting the next TC A.1 meeting and Seminar in Kiev (Ukraine).

PLEASE JOIN US THERE IN OCTOBER of 2018
感谢您的关注

Thank you CATS for a great TC A.1 meeting and International Seminar!