Intermodal & ITS Experts Group Meeting - Final Report

Purpose: Consideration
Submitted by: IIEG Chair
Summary Report for the Closing Plenary:

1. The IIEG meeting was well-attended by 37 delegates representing 13 APEC Economies. 1 delegate from Macau, China attended as observer.

2. Ten economies presented an economy update on various intermodal and ITS developments in their respective economy. Macao, China as the observer, also presented recent ITS development in Macao.

3. IIEG members provided updates on 5 ongoing projects, of which 4 projects have been completed.

4. Six new project proposals and initiatives were presented.
   i) Two of them were approved-in-principle for funding in Session 2 2015.
      - Attracting Private Investment to Transportation Infrastructure Public-Private Partnerships (PPPs): Training APEC Economies to Better-Package “Bankable Projects” (TPT 03/2015, USA)
      - Global Supply Chain Resilience: Phase 3 Continued Implementation (TPT 04/2015, USA)

   ii) Two of them were submitted for funding request in Session 1 2016 and has been endorsed by IIEG before this meeting.
      - Increasing Connectivity Through Real-Time Door-to-Door Transportation Services (Mobility On Demand) with a Focus on Vulnerable Groups [persons with disabilities, elderly, women and youth etc.](USA)
      - Best Practices in Policies, Regulations and Flexibility for Supply Chain Resilience(USA)

   iii) One project proposal was presented for funding request in Session 1 2016 and has been endorsed by IIEG at this meeting.
      - Promoting Regional Economic Integration by Applying Supply Chain Connectivity Framework to Enhance Sustainable Growth and Human Security: Application of phase 1 model(Korea)

   iv) Korea briefed the update of new initiative on APEC Transport Card Taskforce.

5. One special report from PPSTI was presented and the new project proposal of APEC Internet of Vehicle (IoV) Phase III got support from IIEG.

6. The GNSS Implementation Team met in parallel and presented an update on their activities at the IIEG meeting.

7. A new Deputy Chair is still being sought.
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INTRODUCTION

- Mr. Weijun Fei (China), Chair of the Intermodal and ITS Experts Group (IIEG), welcomed the delegates to the IIEG meeting at 0900 hours on April 5, 2016. Ms. Hua Zhang (China) took on the responsibility of the Drafting Committee. Mr. Fei undertook the normal duties of the Chair for the meeting.

- The attendees included 37 delegates representing 13 economies: People's Republic of China; Japan; Republic of Korea; Malaysia; New Zealand; Papua New Guinea; the Philippines; Russian Federation; Singapore; Chinese Taipei; Thailand; the United States and Viet Nam. Macao, China attended as a guest economy. The APEC Program Director also attended the meeting. A list of participants is included in Attachment A.
PART 1: OPENING SESSION

1. CHAIR’S OPENING REMARKS

IIEG Chair Mr. Weijun Fei opened the meeting with a brief verbal report of the results from the 41st TPT-WG Meeting, the outcomes from HOD1& Management Group Meetings, IIEG mission priorities, and IIEG’s key issues for 2016.

TPT-WG takes into consideration the APEC priorities that Peru, as host, has identified for APEC in 2016:
   i) Advancing regional economic integration and quality growth;
   ii) Enhancing the regional food market;
   iii) The modernization of micro, small and medium-size enterprises in the Asia-Pacific; and
   iv) Developing human capital.

To meet the Leaders’ and Ministers’ objectives and current APEC priorities, the TPT-WG is undertaking work to contribute to cross-modal issues such as Supply Chain Connectivity, the Travel Facilitation Initiative, and Women in Transportation.

The TPT-WG continues to deepen linkages with the ABAC, CTI, EWG, EPWG, CTTF and the Policy Partnership on Women and the Economy. The working group also liaises with other international organizations such as the ITF, ICAO and IMO to advance mutual goals.

The Chair reminded the group that IIEG should focus our projects based on the four pillars of activities: Innovation, Supply Chain Connectivity, Sustainability, and Capacity Building. As noted in the 2016 IIEG Work Plan, the group will focus in the following areas:

- Promote a seamless, safe, green and reliable transport system through intermodal connectivity and innovation;
- Address the chokepoints identified by the APEC Supply Chain Connectivity Framework Action Plan;
- Continue close collaboration with the EWG to facilitate the development and diffusion of climate friendly technologies, policies and practices in transportation;
- Continue to promote GNSS technologies;
- Promote energy efficient modes, including rail, inland river transport and short-sea shipping;
- Provide capacity building in the area of emergency preparedness and global supply chain resilience;
- Introduce ITS technologies and best practices; and
- Enhance intermodal and supply chain efficiency, and to improve transport logistics information sharing.

2. APEC PROGRAM DIRECTOR’S REMARKS

APEC Program Director Mr Pavel Bronnikov provided a briefing at the meeting on the project overview, approval processes of APEC Concept Notes, and some project requirements. Mr. Bronnikov also provided advices on successful Concept Notes. Apart from the usual APEC alignment, new Concept Note should aim for a wider APEC, highlighting active cooperation with other APEC sub-fora. His main goal is to ensure TPT-WG members have support required to submit high-quality Concept Note and Project Proposal that would have a higher chance of receiving funding from APEC.

3. SPECIAL REPORT

APEC Internet of Vehicle (IoV) Phase III - Training Program in the Asia-Pacific Region based on APEC Connectivity Blueprint and Strategic Blueprint on Global Value Chains

The Project Overseer Office (China) tabled a PPSTI concept note summary of Phase 3 of the Multi-year project ‘Internet of Vehicles (IOV)’ to seek an appropriate endorsement from the Intermodal and ITS Experts Group. The concept note will be submitted through the PPSTI for APEC funding consideration Session 2 later this year, but it does not require ranking with the new concept notes at the TPT-WG42. US expressed expectation to see more harmonization of the regulations internationally. IIEG finally supported the project proposal in principle.

Background and Objectives:
- Phase One and Phase Two of the project have been collaborated and endorsed by the LEG and IIEG in the last two TPT-WGs in Hong Kong, China and Jeju, Korea.
- Cooperation between TPT-WG and PPSTI on the IOV project was recorded in the previous final reports of the recent LEG and IIEG meetings.
- Phase Three will draw on the successful outcomes from the project to date to promote the development of a complete IOV system in the future.
- The project will be progressed collaboratively with sub-APEC fora, including TPT-WG, SCSC, TEL-WG and ABAC. Each co-sponsoring forum will receive funding for two participants nominated by forum itself.
PART 2: ECONOMY REPORTS

IIEG regards it more and more important for economies to share information in the fields of intermodal and ITS developments. Ten economies presented an economy update on various intermodal and ITS developments in their respective economy. Macao, China as the observer, also presented a report on ITS developments. PowerPoints of Economy Report are included in Attachment B.

• China

The construction and connectivity of the intermodal transport corridors, the information platform system construction and other related works are steadily advancing. First, we have covered the structural shortage of infrastructure in the important transport corridors. The insufficient infrastructure of railway and inland waterway has been improved. And the reform of expanding the capacities in busy sections of corridors has speeded up. Second, we have improved the service level and capacity of transport hubs in the transport corridors. Investments are given to those leading logistics parks with public service attribute, focusing on supporting the logistics parks’ construction of public service facilities, intermodal facilities and information systems. Third, we have guided and encouraged the application of intermodal, containers and semitrailers in corridors. We have promoted demonstration projects of the rail-sea container transport corridor and pilot projects of the semitrailer transport. Last, we have promoted the coordination mechanism, unified policy, facilities connection and information sharing across provinces and departments along the corridors in order to reinforce the comprehensive coordination of the corridors’ operation and administration. The NEAL-NET completed the logistics information interconnection and sharing for 20 ports of China, Japan and Korea. In the future, LOGINK will deepen the information interconnection and sharing cooperation for international and domestic logistics, and build a smooth logistics information "Highway".

• Japan

Japan briefed on the progress of intermodal transport, in particular mutual access of the trailer chassis in North East Asia.

This program is undertaken under the framework adopted by China-Japan-Korea Ministerial Conference on Transport and Logistics which has been going on since 2005 and takes place once every two years.

Bearing in mind that relation among these three economies has been closer and logistics among this area plays very important role, this conference is recognized as
the framework to eliminate impediment and develop mutual cooperation for the purpose of smooth logistics flow.

At present, China, Japan and Korea are conducting 12 measures such as development of seamless logistics system, establishment of environmental friendly logistics, and achievement of safe and efficient logistics. Mutual access of the trailer chassis is one of measures.

After a report in Jeju TPTWG, Japan and Korea started implementing mutual access between Hakata and Pusan in addition to the existing pilot project between Shimonoseki and Pusan.

Based on demand from relevant stakeholders, Korea and Japan are exploring the possibility for a future new pilot projects and to increase the number of chassis for mutual access.

As cooperation between China and Japan, implementation of a pilot project has been discussing. These two economies completed making chassis for mutual access, which satisfy both vehicle safety regulations.

The discussion about the possibility for implementation of the pilot project is expected to be accelerated.

- Republic of Korea

During past 20 years, Korea has deployed ITS on 13,500km of road, which is about 21% of totally planned road length, 63,000km. However, ITS in Korea has been focused on traffic information and user convenience, so there was a weakness in safety service.

In this regard, the Korean government is going to maintain current deployment level, and cover the ITS unequipped area by collaborating with private information service. The Korean government expects to save 1.2(one point two) billion USD(United States Dollar) for further infra deployment, and concentrate on other services like C-ITS and autonomous vehicle.

The Korean government is planning 4 cutting-edge ITS services such as Advanced Traveler Information, Traffic Forecast, Hi-Pass Pay, and Real-time Parking Information. It is expected that both user convenience and road efficiency are going to be increased.
Finally, there are two ongoing R&Ds in the field of ITS in Korea. The first one is C-AHS, which is Cooperative Automated Driving Highway System. Since last July, 47 entities including Korea Expressway Corporation are developing this system, to enable autonomous vehicle driving until 2020.

The other one is C-ITS pilot deployment. C-ITS has been developed as one of national key projects, based on C-ITS Master Plan which is established in 2013.

The pilot deployment is in progress at 88km of major roads including expressway, urban area, and national highway. It is expected that main deployment will be started after 2017.

• **Malaysia**

In July 2009, the Government launched the Government Transformation Programme (GTP 1.0) where 6 National Key Result Areas (NKRA) were identified as focus areas for improvement, amongst is improving Urban Public Transport (UPT) in the Klang Valley. Among key pertinent initiatives are increasing capacity of the KL Monorail/LRT and building integrated transport terminal. These initiatives also are geared to improve public transport ridership by shifting passengers from private vehicles to public transportation.

Recently, few rail based projects such as LRT Extensions Lines and Klang Valley MRT projects have started and are targeted to be completed soon by 2016 and 2017 respectively. Under the Improving Physical Integration of Station pillars, we have Parkway Dropzone Project which is designed to facilitate passenger drop-offs at key public transport stations. The main objective of this plan is to increase the first mile of accessibility and encourage more ridership to the public transport stations. It also aims to ensure great safety and security for pedestrians from the stations to the bus stops and vice versa. Under the same Improving Physical Integration of Station pillars, the Government is also focusing on providing Park And Ride Facilities for commuters who need to travel from their homes to the public transport facilities. The outcome of this project is to increase the number of park and ride users which will eventually increase ridership at the particular stations thus help in reducing congestion in the city vehicles from entering CBD.

• **Papua New Guinea**

The Government of PNG is now focused on maintaining its existing transport infrastructure where priority national roads are being maintained, especially the Highlands Highway together with major airports and sea ports.
The port of Lae which is the biggest in terms of cargo throughput was recently (last year) upgraded and expanded (Lae Tidal Basin - phase 1) to increase its capacity and capability which will result in reduced turn-around times for vessels. The second phase of the Tidal Basin is now on tender and shall be undertaken in the near future. Port Moresby port which is the second largest in the economy has now been relocated to Motukea after signing the transfer agreement with the private owners, late last year. The third biggest port in terms of revenue generation is the Kimbe port in West New Britain Province, which is being upgraded to cater for Oil Palm industry. Other port upgrades are: Alotau Port – to cater for cruise ships; Oro Port and Wewak Port Relocation – both to cater for growth in economic activities and vessel berthing requirements. PNG has also declared the traffic separation scheme at the Jomard Passage in Milne Bay Province so as to ensure bigger vessels operating in the main shipping route are not unduly inconvenienced by small boat operators from the local area. This is part of PNG National Maritime Safety Authority’s commitment to improve the safety standards of small boats and crafts operating within the area.

In the aviation sector, Port Moresby’s Jacksons airport is being upgraded through its Civil Aviation Development and Investment Program (CADIP). The Port Moresby (Jackson’s) International Airport expansion is being undertaken through Public Private Partnership (PPP) arrangement. Other regional/provincial airports such as Madang, Goroka, Mt. Hagen and Tokua which will play host to PNG APEC 2018 will also be upgraded in due course.

The ever increasing population of Port Moresby, PNG’s capital city and the influx of used cars/vehicles pose challenges for traffic congestion wherein the City Authority (NCDC) have already spent over K800 million on upgrading existing roads as well as constructing new arterial roads to connect major suburbs (inner ring roads) and new housing estates on the peripheries (outer ring roads) including the roads leading out of the city. The nations’ capital city is already changing to be on par with the rest of the world with K1.27 billion roads currently under construction. Most of these major infrastructure investments and developments which are of international standard will be critical to PNG hosting important events like the FIFA Under 20 Women’s World Cup in November this year and the APEC SOMs and Leaders’ Summit in 2018.

PNG in its effort to enable delivery of safety and productivity in its land transport system will be requesting assistance from Transport Certification Australia (TCA) to support the current and emerging land transport needs of PNG Government. The Australia’s National Telematics Framework which is enabling sustainable productivity and safety applications of Intelligent Transport Systems in the Australian would be used to monitor (applied to) heavy and public motor vehicles in PNG. The PNG Government, pursuant to its agenda of modernizing its institutions to respond to demands and needs of the travelling public has approved the establishment of Road Traffic Authority (RTA).
PNG in its efforts to be ready in hosting the 2018 APEC Leaders’ Summit, to-date has hosted the Energy Working Group meeting in November, 2014 and the back-to-back Policy Partnership and Women in Economy (PPWE) and the High Level Meeting on Human Resource Development Capacity Building (HLM-HRDCB) in May, 2015, the Forest Ministers’ meeting early this year and now the TPTWG42 which we all are attending here in Port Moresby.

PNG will be hosting some major events such as ACP this year and APEC Leaders’ Summit in 2018 will ride on such experience of hosting APEC related meetings and obviously with support from other APEC economies, the economy can do better in 2018 APEC Leaders’ Summit. PNG’s acceptance to host this TPTWG42 is testament to building its capability and to participate meaningfully in the APEC process.

- **The Philippines**

In 2014, Manila, the economy’s capital city and center of political, social, commercial and cultural affairs experienced its worst logistical nightmare which costed the economy between Php40 to Php50 billion or more than USD 1.0 billion. This resulted from the combined effects of ship scheduling, loaded and empty containers handling and the total daytime truck ban declared by the City of Manila from February to September 2014. With the truck ban, containers from the ports piled up and within days, pushed yard utilization level beyond 100%, reduced port productivity from 20-25 moves per hour to 10-12 moves per hour and increased vessel queuing time from 3-5 days to 8-10 days, sometimes reaching 14 days. Consequently, some vessels temporarily skipped Manila as a port of call. Congestion at the ports and streets of Manila, never before seen, was experienced. The government addressed the situation through the following solutions: (i) Designation of Batangas and Subic ports as extension of Manila ports;(ii) Opening of more Empty Container Depots; (iii) Use of Inland Container Depots; (iv) Rigid conditions for the acceptance/entry of empties inside the ports; and (v) Approval by the Office of the President of a new schedule of storage fees (much higher rates) for imported containers still inside South Harbor and MICT starting on the 11th day from issuance of clearance by the Bureau of Customs. A more sustainable solution implemented starting February 2016 is the Truck Appointment Booking System (TABS). Another major component of the comprehensive solution is construction of dedicated connector roads between the ports/airports and eco-zones.

- **Singapore**

The Expressway Monitoring and Advisory System for expressways is undergoing enhancements. The enhancements will improve incident detection, data quality and readability of electronic signage which allows motorists to make informed travel decisions through graphical and colour representations. In-addition, the electronic signage comes with energy-savings features resulting in cost saving.
The Singapore Autonomous Vehicle Initiative is a platform for industry partners and stakeholders to conduct research and development, and test-bedding of Autonomous Vehicle (AV) technology. Singapore plans to explore AV Mobility Concepts with the aim of reducing demand for car ownership, optimized road capacity and reduction of manpower. Demarcated routes have been identified to allow real traffic conditions to test the AV’s navigation controls. LTA issued a request for information to seek proposals on using AV technology for concepts such as point-to-point mobility-on-demand services, and self-driving buses. The evaluation of proposals will conclude by 2016.

The next-generation Electronic Road Pricing (ERP) system based on GNSS Technology will be rolled-out by 2020 and will replace the current gantry-based ERP system, using satellite navigation technology to provide island-wide coverage with distance-based charging capabilities. This system will have a new On-Board Unit for additional services such as real-time traffic information, coupon-less parking etc. It will support payments via various cards and direct debit from banks.

- **Chinese Taipei**

ITS development in Chinese Taipei has been introduced. Before year 2008, efforts have been put on fundamental research and pilot demonstrations. After that, several major ITS infrastructures have been deployed, such as the RFID-based freeway ETC system, freeway and urban traffic control systems, real-time public transport and traveler information systems. Looking for the future, business models and new technologies, such as cloud computing, big data, and cooperative intelligent transportation systems (C-ITS), should be introduced into ITS to pursue a better quality of life.

Starting from last year, 2015, two connected vehicle pilot projects have been launched and demonstrated. The first one is mainly focused on intersection safety. Vehicles equipped with dedicated short range communication (DSRC) on board unit (OBU) can exchange essential safety related information to prevent intersection collision. For those vehicles not equipped with OBU, high definition radar is installed to detect potential collision and this collision warning is delivered to drivers who don’t have OBU on board by using special designed changeable message sign (CMS). The other project is focused on vehicle to infrastructure (V2I) applications, such as signal violation warning, roadwork warning, in-vehicle signage. For the next step in connected vehicle research in Chinese Taipei, several recommendations and considerations such as positioning accuracy, business models, and standards, will be addressed and need further investigation.

- **Thailand**

In 2011, Thailand commenced the development of a Single Ticket System, and it culminated with the establishment of a Central Clearing House in 2015, which is now
undertaking a trial of the system and staff training to manage the system by August 2016.

The Cabinet has given an approval to a proposal to establish the Common Ticket Company (CTC) in August 2016 to test the system in collaboration with the Office of Transport and Traffic Policy and Planning, Ministry of Transport. Initially the single ticket system will be applicable for Skytrains (BTS), Mass Rapid Transit projects (MRT) and the Airport Rail Link before expanding it to other mass transit providers and other service providers.

- **Viet Nam**

The national technical code of ITS will be completed soon. Some important national technical code of ITS including Vehicle Load Inspection Station, ETC, Monitoring System and Traffic Operating, Traffic Operation Center; Electronic Traffic Signs were promulgated.

**Information and traffic control center**: Monitoring systems and ITS centers have been developed on expressways. There are several national highway and expressway applied ITS such as:

- **In the North**: Phap Van – Cau Gie, Cau Gie – Ninh Binh, Ha Noi Ring Road No.3, Ha Noi – Hai Phong, Lang – Hoa Lac, Noi Bai – Bac Ninh, Noi Bai – Lao Cai, Ha Noi – Thai Nguyen;

- **In the Middle**: Da Nang - Quang Ngai;

- **In the South**: Ho Chi Minh – Long Thanh – Dau Giay, Ho Chi Minh – Trung Luong, Ben Luc – Long Thanh;

**ITS Centers** will be established by 2020 including Nothern ITS Center, Southern ITS Center
**Integrated ITS Technology:** There is a pilot project to integrate 03 current ETC technologies in Viet Nam (Active DSRC, Passive DSRC and RFID). The project will bring recommendations and solutions for ETC in Viet Nam.

**ETC:** National Highway No.1 and No.14 are pilot highway applied RFID technology and WIM (Weighing-in-Motion). All data collected on those highways is sent to Directorate for Road of Viet Nam.

**Load weigher:** Since April 2014, load weigher has installed along all national highways in Viet Nam. Thus, overloaded vehicles significantly reduced. WIM is also proposed to install at tools station on expressways. Some expressways are installed WIM such as Noi Bai – Lao Cai, Long Thanh – Dau Giay.

**Management of the transport business operations:** Regarding to Decree No. 91/2009/ND-CP dated 21/10/2009, all transport companies have to install GPS devices and black boxes for their vehicles. Thus, all truck, container and business vehicles have been installed route tracking devices since July 2013. All data is sent to DRVN and Transport Department of Provincial Government. By early 2018, all taxi and truck will be monitored by GPS tracker.

- **Macao, China**

In order to facilitate the road transportation in Macao, China, the Comprehensive Land Transport Policy is formulated by the Transport Bureau of the Macao SAR Government, with “Public Transport Priority” as the core concept. According to the Public Transport Priority policy, a Light Rapid Transit System (LRT) will be built as the primary means of Macao’s integrated urban public transportation system, with buses and taxis as basic transportation means supplemented by walkways. In terms of infrastructure, the Policy proposes the construction of a “Dual-Circle-Dual-Axis” (DCDA) primary road network to divert through traffic to a peripheral road network in order to ease traffic bottlenecks and congestion. Also, to enhance the intermodal and ITS in Macao, China, the Light Rapid Transit System (LRT) will be seamlessly connected with the Macau International Airport, which will be expanded in different phases under the 20-year Airport Master Plan, to enable larger and smoother traffic in and out of the airport in a more efficient way.
PART 3: PROJECTS SESSION

1. ONGOING PROJECTS UPDATE

Global Supply Chain Resilience - Phase 3 [TPT 02 2014]

UNITED STATES

This project is called “Improving Supply Chain Resilience in the APEC area” and it involves ways that APEC’s interconnected economies can work together to minimize the impact of and recover from disasters. It is now in the fourth year of this work, which is co-sponsored by 18 APEC economies.

The project focuses on one of the APEC Principles of supply chain resilience, inviting participants from all of the 21 APEC economies to a workshop to explore that Principle. For 2015, the Principle was “Risk and Hazard Mapping of Supply Chains.” This workshop was in Peru and 14 economies participated. Each of them developed an Action Plan for what they will do to improve in this area, and the project team is following up with them periodically to see if they can help as their plans are implemented.

The second project is to focus on one of the APEC developing economies and help them develop an Action Plan for Supply Chain Resilience with and for them. In 2015, the Economy was the Philippines and this year it is Viet Nam.

Promoting Public-Private Partnership (PPP) to Develop Dry Ports and Logistics Parks in order to Enhance APEC’s Supply Chain Connectivity [TPT 08 2013A]

VIET NAM

The project was successfully completed in July 2015. The draft final report was circulated through TPTWG and received comments and suggestions from TPTWG colleagues. The final report was revised based on the comments/suggestions then submitted to the APEC Secretariat and published on the APEC website.

The main findings include:

The establishment of dry ports and logistics parks is considered as a key instrument for the enhancement of supply chain connectivity. International experience has shown
that Public Private Partnerships (PPP) works well in the investment and operation management of dry ports and/or logistics parks. The purpose of this study is to propose a reference framework for PPP development based on lessons learned from 4 selected APEC economies.

In order for APEC economies to successfully implement PPP in logistics infrastructure such as dry ports and logistics parks, it is important for APEC economies to take note of this PPP development reference framework presented hereunder:
- Develop a common unified understanding of PPP, dry ports and logistics parks.
- Provide clarifications over the institutional jurisdiction related to dry ports and logistics parks. Within APEC there is a spectrum of institutional framework affecting PPP in each APEC economy.
- Have a clearly defined legal framework and risk assessment capabilities.
- The involvement level of the public sector will depend very much on the strategic importance of the asset considered for PPP. PPP projects should be for strategic assets that are critical for public service delivery.
- The relationship between concession time, service pricing and subsidy or equity needs to be fully considered for any PPP to be successful.

Promoting Regional Economic Integration by Deriving Supply Chain Connectivity Benefits from Cross-Cutting Issues in Transport, Energy, Environment and Human Health [TPT 06 2013]

KOREA

This project was successfully completed. The final report has been submitted.

Promotion of Regional Economic Integration by Developing APEC Gateway Port Connectivity [TPT 01 2015A]

CANADA

The RFP of TPT 01 2015A was posted on APEC website and also distributed to all economies by the PO, and closed on March 23, 2016. The proposals received were under evaluation.
Developing a “Connectivity Map”

JAPAN

Japan reported TMM8 follow-up Projects in TMM9 held in Cebu last year, such as APEC Connectivity Map, APEC Quality Transport Vision and PPP Best Practices which have successfully been completed. Japan took emphasis on briefing the revised APEC Connectivity Map including additional projects provided from an economy just before TMM9 at IIEG meeting. It is expected for economies to be a platform in considering future connectivity.

2. NEW PROJECT PROPOSALS AND INITIATIVES

There were six new projects proposals and initiatives presented at the IIEG meeting.

i) Two of them were approved-in-principle for funding in Session 2 2015.

- Attracting Private Investment to Transportation Infrastructure Public-Private Partnerships (PPPs): Training APEC Economies to Better-Package “Bankable Projects”(TPT 03/2015, UNITED STATES)

- Global Supply Chain Resilience: Phase 3 Continued Implementation (TPT 04/2015, UNITED STATES)

ii) Two of them were submitted for funding request in Session 1 of 2016 and has sought inter-IIEG endorsement before this meeting.

- Increasing Connectivity Through Real-Time Door-to-Door Transportation Services (Mobility On Demand) with a Focus on Vulnerable Groups [persons with disabilities, elderly, women and youth etc.)

UNITED STATES

This project will conduct and document a workshop among APEC economies. The workshop aims to facilitate information and knowledge sharing of innovative international practices to increase connectivity through integrated, door-to-door transportation services which can be referred to as Mobility on Demand solutions. Results of the workshop will be particularly beneficial to vulnerable groups including persons with disabilities and the elderly. Both public and private services using various available transportation modes will be addressed to enhance an independent living lifestyle and provide for inclusive growth. Personal mobility will be enhanced by shared and interconnected transportation services. Examples include, but are not limited to, Ride Sourcing (e.g., Uber), Car Sharing (e.g., Car2Go), Bike Sharing (e.g., U-Bike),
and Intermodal Mobility Apps (e.g., Ridescout). This innovative alternative to traditional transportation service presents a promising future to the needs of the aging population and those who rely on paratransit operations. The workshop will be conducted in 2017, in conjunction with the TPTWG meeting.

Increasing connectivity through real-time door-to-door transportation services (also called Mobility On Demand) utilizes a variety of resources, including shared use mobility services, in order to achieve a seamless multimodal travel. A particular benefit is to address the challenge of the lack of all-inclusive and safe mobility options for travelers with disability, the elderly, women, and youth. It also leverages the opportunity given by the Millennial generation’s increased use of public transportation services. This situation is driven by the growing waves of “sharing economy”, “on-demand economy” and rapid advances in technologies. This lends itself as a promising solution to address mobility needs that includes the first mile/last mile link which is of particular concern to the vulnerable groups. Increased needs for accessible transportation choices are facing all APEC economies where concern has been expressed for inclusive mobility. Indeed, the 2015 APEC Leaders’ Declaration notes that “promoting innovations in the transportation sector as we move towards achieving inclusive mobility,” and “[Leaders have] instructed officials to continue to enhance their work on connectivity of transportation networks.” Additionally, APEC Transportation Ministers have recommended in 2015 “that economies explore how ITS can make transportation networks more accessible to persons with disabilities, older people, women, children and students, low-income populations, and other vulnerable groups.” This project, taking its direction directly from APEC Leaders and APEC Transportation Ministers, takes advantage of advanced technology to support integrated multimodal transportation for real-time door-to-door service. The proposed APEC workshop and subsequent documentation and publication of results will promote greater transportation accessibility in APEC economies through information and knowledge sharing on advanced transportation system operations, policy and regulatory measures, innovative technologies and universal design concepts.

- **Best Practices in Policies, Regulations and Flexibility for Supply Chain Resilience**

- **UNITED STATES**

The United States recently submitted a Concept Note for the next funding round. If approved, for this next phase the Principle we will focus on regards best practices in policies, regulations and flexibility to enable global supply chain resilience. If this project receives APEC funding, Papua New Guinea will receive assistance in improving their overall supply chain resilience.
iii) One project proposal was presented for funding request in Session 1 of 2016 and has been endorsed by IIEG at this meeting.

- Promoting Regional Economic Integration by Applying Supply Chain Connectivity Framework to Enhance Sustainable Growth and Human Security: Application of phase 1 model

KOREA

The main objective of this project is to develop an integrated framework for evaluating supply chain and energy efficiency, emissions of greenhouse gases and other noxious gases, and their impacts on human population in intermodal and logistics system. One of important indicators developed by this project is to measure short-term and long-term impacts on human population by transporting sources. The project developed a state-of-the-art integrating framework to link traffic generation, emission dispersion and concentration in neighbourhood and their impacts on human population. The impacts were monetized to capture social costs. The project was proposed to be conducted in two phases: one to develop the framework and the other to apply the model to various economies. Despite the completion of the project and submission of a new Concept Note to do the second phase work, the decision on funding the second phase work has not been made yet. The contract researchers, however, will continue to work on various case studies to apply the mode when a new work is funded by APEC.

iv) One initiative was briefed.

- Initiative for APEC Transport Cards

KOREA

APEC Transport Card is a transport card system which provides an unrestrained access to public transportation systems of all APEC economies.

The advantages of this project can be described as below;

First, redundant investment can be spared to all APEC members who are going to invest in the common transport infrastructure required for the program.

Second, a boom in regional tourism is expected as tourists will have an easier access to the public transportation systems within the region.

APEC TPT-WG 41 was held in Jeju of Korea, and the Korean government introduced transport card status of each economy and discussed about realization of APEC transport card with delegation and experts of 11 economies. They showed their deep
interests in the APEC transport card and agreed to continue discussion by organizing a Task-Force.

Afterwards, we held APEC Task-Force 1st meeting for the discussion on February 2016. Every participant shared the various point-of-views on organizing the Task-Force of APEC transport card and continued the discussion together about definition and scope, technical methods of APEC transport card.

The Korean government suggests the side meeting for the APEC card at APEC TPT-WG 43 on September and the Korean government wants to have detailed discussion with more economies.

Japan hopes Task Force Meeting for pathfinding to carefully discuss among relevant economies/specialists from wide aspects for finding challengings and ways, and also looks forward to hearing its progress in the side meeting and the next IIEG.

PART 4: CLOSING SESSION

1. APEC GNSS IMPLEMENTATION TEAM (GIT) REPORT

UNITED STATES/ CHINESE TAIPEI

The 21st Meeting of the Asia Pacific Economic Cooperation (APEC) Global Navigation Satellite System (GNSS) Implementation Team (GIT/21) was hosted by Papua New Guinea from 5-6 April 2016 in conjunction with the 42nd APEC Transportation Working Group (TPTWG) meeting.

Seven APEC Economies, namely People's Republic of China; Republic of Korea; New Zealand, Papua New Guinea; Chinese Taipei; Thailand; and the United States participated in GIT/21 meeting. The GIT/21 included industry participation to incorporate the views of the private sector.

Presentations covered the GIT project: Regional GNSS Receiver Autonomous Integrity Monitoring (RAIM) Prediction System, and the AEG project: Enhancing Aviation Connectivity and Emissions Reduction via Implementation of Performance-Based Navigation (PBN) Assistance Program. Presentations also included an update on the APEC GIT website, economy reports on GNSS implementation in APEC economies, covering GNSS applications in air, maritime, and land transportation including discussion of the benefits of a regional Satellite-Based Augmentation System (SBAS). The GIT/21 meeting also included presentation of draft concept note: “Multi-GNSS Demonstration Project for Surface Transportation” sponsored by Japan.
Updated information on GNSS constellations was provided with a report on GPS from the United States and Beidou from the People’s Republic of China which were well received by the GIT.

2. NOMINATIONS AND ELECTIONS

The position of the Deputy Chair remains vacant since the 40th TPT-WG meeting in Hong Kong and no nominations has been put forward at this IIEG meeting. Thus, the election of the Deputy Chair will be postponed to future meeting. The IIEG Chair encouraged any participating economy to consider volunteering for the role of the Deputy Chair.

3. CLASSIFICATION OF MEETING DOCUMENTS

There were no documents tabled at the meeting that were considered to require restricted access.

ACKNOWLEDGEMENT

The IIEG would like to express its appreciation for the wonderful hospitality of Department of Transport Papua New Guinea in hosting the APEC TPT-WG 42 meeting in Port Moresby, Papua New Guinea. In particular, the IIEG thanks the PNG officials for their excellent support to the IIEG Experts Group.

The IIEG also would like to thank the assistance and endeavour of the Drafting Committee (Ms. Zhang Hua) for preparing the final report.

The IIEG thanked all the IIEG participants for their valuable contribution to the meeting.

ATTACHMENT

A: IIEG Meeting Attendee List
B: PowerPoints of Economy Reports
## ATTACHMENT A - IIEG MEETING ATTENDEE LIST

### 42nd APEC TRANSPORTATION WORKING GROUP MEETING

4 - 7 April 2016, Port Moresby, Papua New Guinea

**EXPERT GROUP [IIEG] Attendance List**

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### 42nd APEC TRANSPORTATION WORKING GROUP MEETING

#### 4 - 7 April 2016, Port Moresby, Papua New Guinea

**EXPERT GROUP [IIEG]**

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# APEC TRANSPORTATION WORKING GROUP MEETING

## 42nd APEC TRANSPORTATION WORKING GROUP MEETING

4 - 7 April 2016, Port Moresby, Papua New Guinea

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ATTACHMENT B – ECONOMY REPORTS

1. People's Republic of China
2. Republic of Korea
3. Malaysia
4. The Philippines
5. Singapore
6. Chinese Taipei
7. Thailand
8. Viet Nam
9. Macao, China
We are focusing on promoting the construction of the multimodal transport corridor from three aspects.

1. Infrastructure
   - Cover the shortages of infrastructure in important corridors.
   - Improve the service level and capacity of transport hubs in the transport corridors.

2. Transport Organization

3. Management Policy

Recent years, China has been trying hard to establish unobstructed, economic and convenient trans-regional corridors.

We have also improved constantly the application of Big Data, Internet of Things, Cloud Computing and other advanced information technologies.
Focuses on supporting the logistics parks’ construction of public service facilities, intermodal facilities and information systems.

The survey on public logistics parks shows:

- One logistics park has attracted 10 large logistics enterprises and 100 small logistics enterprises.

The corridors have preliminarily connected with the international transport corridor.

It's in favor of win-win development for economies and regions along “Belt and Road”.

Transport Organization

- Encourage the corridors to use intermodal, semi-trailers and containers.

Management Policy

- Promote regional cooperation mechanism.

The capacity and clearance of corridors have been significantly enhanced.

- The mileage of railways in operation: 120,000 km
- The mileage of roads: 4,570,000 km
- The mileage of highways: 120,000 km
- The mileage of inland high-grade waterway: 13,600 km

No.2 Information Platform

Logistics information platform can meet the market requirements for basic exchanging and public information sharing, and promote inter-enterprise, inter-sectoral, inter-regional and international logistics data exchanging and information resources sharing.

- The corridors have strengthened the cooperation between vast inland areas and coastal, frontier or riverside areas.

E.G.
The rail-sea container transport corridor of Ningbo-Zhoushan port

- Liner trains have been operated
- “One Bill” service
In 2012, the National Transport Logistics Public Information Platform (LOGINK) was officially launched. The main works are:
- Have established standard system
- Have built a switched network
- Have promoted integrity system
- Have developed international cooperation

The main works include:
- Technical meetings: 17 times
- NEAL-NET: 20 ports

In the future, LOGINK will build a smooth logistics information "Highway".

Switched Network
Break the information bulwarks.
- More than 30 logistics parks have achieved information network sharing.
- 42 softwares of logistics management have been developed or remoulded.
- More than 10,000 users.

Credit System
- Real information: more than 10,000,000
- Credit information services
- Online government services

International Cooperation

- Data Element: 660
- Document: more than 40
- Data Interface: 15

Standard System

1. Credit System
- Real information: more than 10,000,000
- Credit information services
- Online government services

2. Switched Network
- Break the information bulwarks.
  - More than 30 logistics parks have achieved information network sharing.
  - 42 softwares of logistics management have been developed or remoulded.
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3. International Cooperation
- Technical meetings: 17 times
- NEAL-NET: 20 ports

In the future, LOGINK will build a smooth logistics information "Highway".
Thank you!
**Public-Private Collaboration**

- **Goal**: Development of automated driving technology by cooperating with roadside infrastructure
- **Period**: July 2015 – July 2020 (5 years)
- **Budget**: 31 Million USD (75% of Government investment & 25% of private investment)

**Advanced Services**

- **Goal**: Pre-verification of technology & services for C-ITS deployment
- **Period**: July 2014 – July 2017 (4 years)
- **Budget**: 15 Million USD (100% of Government investment)

**Ongoing R&D**

**Development of Cooperative Automated driving Highway System**
- **Goal**: Development of automated driving technology by cooperating with roadside infrastructure
- **Period**: July 2013 - July 2020 (4 years)
- **Budget**: 31 Million USD (75% of Government investment & 25% of private investment)

**Cooperative ITS Post Deployment**
- **Goal**: Verification of technology & services for ITS deployment
- **Period**: July 2011 - July 2017 (3 years)
- **Budget**: 19 Million USD (100% of Government investment)

**Public-Private Collaboration Effects**

- Complete 21% of ITS nation-wide deployment
- Provide 100% of nationwide traffic information
- Various traffic data generated from public (infra) and private (smart devices) collaboration
- Save the budget for infra deployment
- ITS service focused on traffic safety issue
- (Budget reduction) Save about 1.2 billion USD of additional ITS deployment
- (Further cooperation) Development of new business model for public-private integrated service
INITIATIVES ON IMPROVING URBAN PUBLIC TRANSPORT

PARKWAY DROPZONE
Designed to facilitate passenger drop-offs at key public transport stations.
Integration of existing bus stops–rail stations along major highways.
Major components: high-roof bus stop for seamless transfer; pedestrian walkway/covered walkway for better integration.

Increasing capacity of the KL Monorail/LRT

Klang Valley MRT Project
- Phase 1: Operation by December 2016 and full operation by July 2017.
- Linking from Sungai Buloh to Kajang.
- Current progress: 79% completion at Dec 2015.
- Proposed second MRT line to be developed, which spanning from Sungai Buloh to Putrajaya (52.2km length).

Klang Valley LRT Project
- Ongoing LRT Extension Project (LEP):
  - LEP Ampang Line – June 2016
    - Length: 17 km (12 stations + 1 shared station)
    - No. of Park n Ride – 5 (multi storey)
  - LEP Kelana Jaya Line – June 2016
    - Length: 17.7 km (12 stations + 1 shared station)
    - No. of Park n Ride – 7 (multi storey)
- Proposed LRT Line 3 to be developed, which spanning from Bandar Utama to Klang (36km length).

Initiatives on Improving Urban Public Transport

- Building new and upgrading bus stops
- Stepping up enforcement
- Improving physical integration of station
- Reorganising bus network
- Increasing capacity of the KL Monorail/LRT

Outline Summary

- Overall Initiatives On Improving Urban Public Transport
- Increasing capacity of the KL Monorail/LRT: Current Ongoing Project
- Improving physical integration of station: Current Ongoing Project
PARK AND RIDE FACILITIES

Parking facilities for commuters who need to travel from their homes to the public transport facilities.

Location of train station (e.g. suburban, end of line, distance from Central Business District - CBD)

Type of parking development (e.g. at grade, multistorey)

PARK AND RIDE FACILITIES: OUTCOMES

- Increase number of park and ride users
- Reduce congestion in the city vehicles from entering CBD
- Increase ridership at the stations (1 parking bay = 2.2 riders)

THANK YOU
### ADDRESSING PORT CONGESTION

#### BACKGROUND
- Truck ban was imposed by Manila City Govt. starting February 24, 2014, temporarily lifted on May 12, 2014 due to the WEF and resumed on May 21, 2014 up to September 13, 2014.
- Ship scheduling, empty & loaded container handling, complicated by truck ban, resulted in port congestion rarely seen in recent times.
- During the truck ban, yard utilization in 2 major Manila ports was more than if not 100%, port productivity plummeted and vessel queuing time increased.
- Cost to the economy reached between PhP40 billion to PhP50 billion or about USD 1.0 billion.

#### IMPACT OF THE TRUCK BAN

**TO JOAN DELA CRUZ** (common citizen)
- Additional costs he has to pay arising from:
  - Increased shipping cost (container imbalance, detention fee, congestion fee)
  - Increased trucking cost
  - Increased terminal operations cost (collected by terminal operator) arising from prolonged container dwell time

**TO IMPORTER**
- Failure to receive imported goods on time
- Failure to deliver imported goods (proxy cost of inputs to production or manufacturing) to customers
- Failure to ship containers to foreign economy of destination on time
- Delay in fulfilling contractual commitments
- Temporary layoff/rotation of workers due to glut/excess inventory in exportable items

**TO EXPORTER**
- Failure to ship their containers to foreign economy of destination on time
- Risk of defaulting on sales/production contractual commitments
- Temporary layoff/rotation of workers due to glut/excess inventory in exportable items

#### AGGRAVATING CIRCUMSTANCES
- Lack of dedicated road linkages from port to ecozone
- Proliferation of Obstruction:
  - Informal settlers near port zone area
  - Illegal vendors, pedicabs/tricycles
  - Road diggings
- Increased vehicle sales not matched by increased infrastructure

#### ACTIONS UNDERTAKEN JOINTLY BY GOVERNMENT AND THE PRIVATE SECTOR

**By the Government**
- Coordination at highest level (cabinet cluster)
- Made Subic and Batangas ports as extension of Manila ports
- Decommissioned containers ports by relocating problematics containers to Subic
- Imposed higher storage fee to discourage cargo owners in making the ports virtual storage areas/warehouse
- Managed withdrawals of empty containers
- Extended working hours by government offices involved in clearing containers

**By the Private Sector**
- Open their warehouses at night when trucks are allowed to withdraw/deliver cargoes
- Make Saturday and Sunday working days to haul processed containers from the port
- Terminal Operators
  - Extended working hours and provided additional back-up areas

#### ACTIONS UNDERTAKEN JOINTLY BY GOVERNMENT AND THE PRIVATE SECTOR

**Making Solution Sustainable Through Terminal Appointment and Booking System (TABS)**
- Terminal Operators (ATI & ICTSI) introduced soft TABS in October 2014
- Terminal Operators conducted capacity building measures for all stakeholders on February 10-11, 2015 and fully implemented tabs starting February 15, 2016
- TABS seeks to spread the volume of containers 24/7 and reduce trucks plying Metro Manila roads on certain hours of the day or days/week
- TABS matches terminal resources with landside demand leading to operational predictability and efficiency and robust supply chain

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4/6/2016
Existing EMAS for expressway is in the midst of enhancement to improve the traffic incident management capabilities. The enhancement will improve the incident detection and data quality and provide motorists with more graphical messages for easier readability. The new electronic signs are equipped with energy-saving features resulting in operational cost savings.

Since Q4 2014, LTA had enhanced and successfully launched the enhanced graphical messages and colour-coded travel time at signboards leading to and along some of the expressways and will fully complete by Q1 2017.

The development of Next Generation Road Pricing System was awarded to the consortium of NCS Pte Ltd and MHI Engine System Asia Pte Ltd in Feb 2016. The Next Generation Road Pricing System will be operational from 2020 onwards and it will provide greater flexibility in managing traffic congestion and enhance motorist experience by providing real time traffic updates, parking information, coupon-less parking & etc.

NEXT GENERATION ELECTRONIC ROAD PRICING SYSTEM
- The development of Next Generation Road Pricing System was awarded to the consortium of NCS Pte Ltd and MHI Engine System Asia Pte Ltd in Feb 2016.
- The Next Generation Road Pricing System will be operational from 2020 onwards and it will provide greater flexibility in managing traffic congestion and enhance motorist experience by providing real-time traffic updates, parking information, coupon-less parking & etc.

Singapore Autonomous Vehicle Initiative (SAVI)
- Vision
  Reduce demand for car ownership
  Optimise road capacity
  Reduce manpower reliance

- Autonomous bus
  for mass transport
  AV Mobility-On-Demand
  for AV Freight
  for movement of goods on fixed routes and point-to-point travels using a network of expressways during night time. This can alleviate demand responsive shared vehicles and maximise road capacity.
- Dedicated route for Autonomous Vehicles
- Surveillance Camera
- Group Mechanical Incident Message
- Web Camera
- Colour-Code Travel Times
- Detection Camera

Expressway Monitoring and Advisory System (EMAS)
- Existing EMAS for expressway is in the midst of enhancement to improve the traffic incident management capabilities. The enhancement will improve the incident detection and data quality and provide motorists with more graphical messages for easier readability. The new electronic signs are equipped with energy-saving features resulting in operational cost savings.
- Since Q4 2014, LTA had enhanced and successfully launched the enhanced graphical messages and colour-coded travel time at signboards leading to and along some of the expressways and will fully complete by Q1 2017.

Driverless vehicles may become the mainstay of public transport here. Dedicated routes for autonomous vehicles are planned.
Overview

- History of ITS development in Chinese Taipei
- Pilot Project - Advanced Traffic Management and Innovative Application on C-ITS Integration
- Simulation Experiments
- Recommendations and Follow-up Actions

Roadmap of ITS Development in Chinese Taipei (Government Perspectives)

- Prior 2003 (Fundamental Research)
  - Communication technology standardization and algorithm for freeway and urban, and urban traffic control software
  - Architecture of traffic information collection and integration
- 2003~2008 (Pilot and demonstration)
  - Freeway and Urban traffic control systems
  - Realtime bus information system
  - Local electronic payment system
- 2008~2013 (Deployment)
  - Nationwide freeway, expressway, and urban coordinated traffic control systems
  - Nationwide traffic information services via Web, smartphone
  - Electronic payment system for freeway toll and public transportation
- 2014+ (Innovative applications)
  - Cloud computing and big data-based transportation management and information services
  - Cooperative ITS, connected vehicles

Framework

- Accident Analysis
- Traffic Management
- Traffic Information
- Energy Conservation

- Traffic Safety
- Commercial vehicle management
- Dynamic traffic re-allocation
- Emergency accident information

Foreign Experiences

- Export Recommendations
- Energy Conservation (Issues)
- Dynamic route guidance (Application services)

Briefing of Pilot Project

- Advanced Traffic Management and Innovation Application on Connective ITS Integration

- Duration
  - 2015~2018
- Vision
  - Safety, Efficiency, Sustainability
  - Providing a basis of subsequent ITS projects development
- Research outline
  - Regulation review
  - Study of safety and efficiency issues of V2V, V2I applications
  - Considerations and models of adopting V2X applications into existing traffic management platforms
  - Planning of test bed in urban roads and freeway system
  - Field trials of safety and efficiency application
  - Performance evaluation

Simulation Experiment (V2X-based Intersection Collision Avoidance System)

- Deployment
  - Hsinchu city & county
  - Accident-prone location
- Testing
  - V2V
  - V2R
Recommendations and Follow-up Actions

- Technical Framework
  - Accuracy & Communication quality improvement
  - More safety application (Pedestrian/Motorcycle)
  - Security and Certification

- Operation
  - Business model
  - Deployment & Infrastructure maintenance
  - International cooperation

- Legal Issues
  - Standardization
  - Intelligent property
  - Data protection & Privacy

Simulation Experiment
(V2R-based Intersection Collision Avoidance System)

- CMS Deployment

Simulation Experiment
(V2V-based Intersection Collision Avoidance System)

- Radar Detection

THANKS FOR YOUR ATTENTION
Government's Critical Choice

**Choices between**
- Single Common Fare Collection System
  - Ease of travel for the public & visitors
  - Lower costs of operation and usage
- Multiple Independent Isolated Systems
  - Inconvenience, cost and confusion to public & visitors
  - Higher costs and no interoperability
  - Waste of resources

**Single Common System**

**Common Ticket Objective**

- Convenience
- Fraud Prevention
- Traffic Pattern/Gauging

**Single Standard**

**Status of MRT System**

1. Present Service 74.7 km.
2. Under Construction 107.5 km.
3. MRT Project 252 km. (2016)

**Common Ticket Objective**

- Passenger
- Service Provider
- Government
GPS System
- Provide Real Time information for passengers at Bus Stop
- Track Bus Operation and Fleet Management
- Assist in Scheduling, Tracking, & Evaluating E-Ticketing & Common System
- Provide Passengers with Convenience Especially Intermodal Trips
- Attain Transparency of Fare Collection
- Easily Acquire Quantification of Patronage
- Reduce Cash Collected
- Promote Public Transport
Thank you
UPDATE THE APPLICATION OF ITS IN VIETNAM

International Cooperation Department
Ministry of Transport of Viet Nam

IIEG – APEC TPT WG 42
5-6 April, Port Moresby, PNG

Viet Nam transport infrastructure has been developed rapidly, however it’s still behind the growth of vehicles (about 10% / year).

Standards of ITS

National technical code of ITS conducted in 2011 by MOT including codes of stations, camera, facilities, viable signal system, data storage system.

Now, some important national technical code of ITS including Vehicle Load Inspection Station, ETC, Monitoring System and Traffic Operating, Traffic Operation Center; Electronic Traffic Signs were promulgated.

The national technical code of ITS will be completed soon this year.

Some problems from different growth rates of infrastructure and vehicles:
+ High traffic density in large urban areas
+ Mixed up with all kinds of vehicles
+ Too many motorcycles
+ Public transportation gradually improved
+ Poor awareness of drivers on safety traffic

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Information and traffic control center:
Monitoring systems and ITS centers have been developed on expressways. There are several national highway and expressway applied ITS such as:

In the North: Phap Van – Cau Gie, Cau Gie – Ninh Binh, Ha Noi Ring Road No.3, Ha Noi – Hai Phong, Lang – Hoa Lac, Noi Bai – Bac Ninh, Noi Bai – Lao Cai, Ha Noi – Thai Nguyen;

In the Middle: Da Nang - Quang Ngai;

In the South: Ho Chi Minh – Long Thanh – Dau Giay, Ho Chi Minh – Trung Luong, Bao Luc – Long Thanh;

ITS Centers will be established by 2020 including Northern ITS Center, Southern ITS Center.

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Management of the transport business operations: Regarding to Decree No. 91/2009/ND-CP dated 21/10/2009, all transport companies have to install GPS devices and black boxes for their vehicles. Thus, all truck, container and business vehicles have been installed route tracking devices since July 2013. All data is sent to DRVN and Transport Department of Provincial Government. By early 2018, all taxi and truck will be monitored by GPS tracker ETCS.

Load weigher: Since April 2014, load weigher has installed along all national highways in Vietnam. Thus, overloaded vehicles significantly reduced. WIM is also proposed to install at toll station on expressways. Some expressways are installed WIM such as Noi Bai – Lao Cai, Long Thanh – Dau Giay.

Integrated ITS Technology: Highways and expressways are funded by different sources with many technologies. 

Integrated ITS Technology: There is a pilot project to integrate 03 current ETC technologies in Vietnam (Active DSRC, Passive DSRC and RFID). The project will bring recommendations and solutions for ETC in Vietnam.

Thank you!
The Comprehensive Land Transport Policy of Macao

According to the "Public Transport Priority" policy of the Macao SAR government, a Light Rapid Transit System (LRT) will be built as the primary transportation means of Macao’s integrated urban public transportation system, with buses and taxis as basic transportation means supplemented by walkways.

Overall structure

* "Public Transport Priority" policy
* LRT as primary transportation means
* Buses and taxis as basic transportation means
* Walkways as supplementary system
Civil Aviation Policy of Macao

An airport passenger terminal extension project is under way to increase the capacity to handle more traffic volume. The Macao Civil Aviation Authority has drawn up a 20-year Airport Master Plan that lays out the developmental phases of the Macao International Airport expansion.

The Comprehensive Land Transport Policy of Macao

Supportive measure: Traffic facilities

Specific policy directions:
- Construct a Dual-Circle-Dual-Axis (DCDA) primary road network to divert through traffic to a peripheral road network in order to ease traffic, bottlenecks and congestion.
- The Policy aims to continuously improve pedestrian and cycling facilities as well as public car parks that suit local conditions, including the provision of accessible transport facilities for the elderly and disabled.

Supportive measure: Service quality

Specific policy directions:
- Improve the planning and traffic management of the Macao transportation system with Light Rapid Transit System (LRT) as the primary means, buses and taxis as connecting services, which are supplemented by walkways. The quality of public transportation is enhanced through seamless integration.
- Develop and integrate advanced intelligent services, provide fast and convenient cross-border transport, enhance electronic applications in law enforcement, as well as improve the promotion and education of road safety awareness.

Civil Aviation Policy of Macao

Airport Expansion & Airport Master Plan

Project of Macao LRT (open 2019)
THANK YOU!