



**Asia-Pacific
Economic Cooperation**

2017/TPTWG44/PLEN2/002d

Agenda Item: 3.4

Intermodal and ITS Experts Group Meeting - Final Report

Purpose: Consideration
Submitted by: IIEG Chair



**44th Transportation Working Group Meeting
Closing Plenary
Taipei, Chinese Taipei
28 April 2017**

Intermodal and ITS Experts Group (IIEG) - Final Report

Summary Report for the Closing Plenary:

1. The IIEG meeting was chaired by Mr. Thomas Kwan and well-attended by 40 delegates representing 15 APEC Economies. 2 delegates from Macao, China attended as observer.
2. IIEG members reviewed and approved the IIEG Terms of Reference.
3. US provided updates on the completed projects:
 - 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] combined with the Best Practices in Policies, Regulations and Flexibility for Resilience of Global Value Chains [TPT 03/2016]
4. Chinese Taipei presented one new self-funded study on the new SOLAS VGM impact on supply chain and shared one new Concept Note on Value Added Port for information (CN to be submitted through MEG). No other new Concept Notes were presented at this meeting.
5. A roundtable discussion was held to discuss the Concept Note development and application process. IIEG members then held small group discussions on the common issues and challenges, new possible projects and activities related to the IIEG.
6. Eleven economies presented an economy update on various intermodal and ITS developments in their respective economy. Macao, China as an observer, also presented recent ITS developments in Macao, China.
7. IIEG and GNSS Implementation Team (GIT) held a joint session and received 6 presentations on GNSS technology for Intermodal and Intelligent Transportation System applications.
8. IIEG responded to the Lead Shepherd's request and provided information and actions items for the 2017 TPT-WG workplan.

1. WELCOME & INTRODUCTION

- Mr. Thomas Kwan (Canada), Chair of the Intermodal and ITS Experts Group (IIEG), Ms. Hua Zhang (China), Deputy Chair, welcomed the delegates to the IIEG meeting at 0900 hours on April 26, 2017. Mr. Thomas Kwan and Ms. Hua Zhang, took on the responsibility of the Drafting Committee. Mr. Thomas Kwan undertook the normal duties of the Chair for the meeting.

- The attendees included 40 delegates representing 15 economies: Canada, China, Indonesia, 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. A list of participants is included in **Attachment A**.



*Joint IIEG and GIT Team Photo, Chinese Taipei, April 2017

2. CHAIR'S REMARKS

IIEG Chair Mr. Thomas Kwan opened the meeting with the outcomes from HOD1 & Management Group Meetings, IIEG mission priorities, IIEG's key issues for TPT- WG 44 in context of 2017 APEC priorities and a brief verbal report of the results from the 43rd TPT-WG Meeting. The IIEG Chair also stressed the importance of IIEG members to collaborate with each other and with APEC fora for partnership and information sharing opportunities.

TPT-WG is to take into consideration the APEC priorities that Vietnam, as host of APEC 2017, has identified for APEC in 2017:

- i. Promoting sustainable, innovative and inclusive growth;
- ii. Fostering far-reaching regional integration and connectivity;

- iii. Supporting small business competitiveness, innovation and participation in trade; and,
- iv. Enhancing food security and sustainable agriculture in the face of climate change.

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.

Based on the objectives and priorities of IIEG, combined with the Lead Shepherd's direction, IIEG members discussed the TPT-WG 2017 work plan for the Lead Shepherd's consideration.

3. REVIEW AND FINALIZE IIEG TERMS OF REFERENCE

IIEG members reviewed and approved the IIEG Terms of Reference (TOR). (See **Attachment B**)

4. UPDATES OF ON-GOING PROJECTS

Attracting Private Investment to Transportation Infrastructure Public-Private Partnerships (PPPs): Training APEC Economies to Better-Package “Bankable Projects [TPT 03/2015] – USA (Completed)

In 2016 the United States led a work stream to build capacity within APEC Economies to package, bid out, and manage public-private partnerships (PPPs) in the transportation infrastructure sector. This work stream had two main components – workshops and an analytical report. The workshops focused on helping governments better understand what prospective private investors and project developers need to see in a PPP deal (and its broader enabling environment) in order to trigger their investment. The workshop in Sydney focused on the airport and seaport sub-sectors. The workshop in Mexico City focused on surface transportation (i.e., road, rail, transit, bridge, tunnel sub-sectors). The report examined PPP enabling frameworks, best practices, and gaps that exist in Asia-Pacific transportation infrastructure markets.

For 2017, the United States had hoped to facilitate some form of “embedded” technical assistance to help several APEC Economies make demonstrable progress on one of three portions of the transportation infrastructure PPP project process, which can be generally divided in the following manner: 1) creating government capacity to do PPP deals, either through enabling legislation or standing up a functional office, 2) bidding out a PPP project, including the due diligence and feasibility studies necessary to “package” a deal, and 3) managing the financial close, construction, and post-project completion maintenance of an infrastructure asset. The United States is working to ensure that budget support exists for this initiative, and is happy to discuss working with possible volunteer APEC Economies who might be able to benefit from this capacity building support.

Global Supply Chain Resilience: Phase 3 Continued Implementation [TPT 04/2015] and Best Practices in Policies, Regulations and Flexibility for Resilience of Global Value Chains [TPT 03/2016] – USA (Completed)

The 7 principle framework was developed in 2013. The 7 principles are:

1. Share information and knowledge to promote supply chain resilience.
2. Promote disaster risk management and hazard mapping to better understand potential risks to supply chain resilience.
3. Support planning and business continuity management to improve global supply chain resilience.
4. Promote best practice policy, regulations, and flexibility to enable global supply chain resilience.
5. Leverage regional cooperation to support the supply chain, including coordination with other multinational organizations working on supply chain resilience inside and outside the APEC region.
6. Promote critical infrastructure protection and inter-modalism as a key component of supply chain resilience.
7. Recognize and promote best practice in human resource and capacity management in the context of supply chain resilience.

Since the launch of the framework in 2013, the US has led a two-pronged approach to implementation. This involves an annual workshop targeting one of the seven principles, and invites participants from all APEC economies. The second part involves an annual workshop focused on one developing economy, providing targeted capacity building support to improve the resilience of supply chains in a specific area or sector.

The focus in 2015 was the principle on “Disaster Risk Management and Hazard Mapping”. In 2016, the United States led a two-day workshop in Bangkok, Thailand that focused on “Human Resource Capacity Management”, detailing the importance of individual, organizational, and leadership resilience.

The economy-level annual event is an opportunity for targeted capacity building support to improve the resilience of supply chains in a specific area or sector, identified as a priority by the particular economy. To date, three economy-level workshops have been conducted. In 2015, the workshop took place in The Philippines and focused on creating a joint action plan with 13 key activities, ranging from business continuity management training for MSMEs to reviewing policies involving trucking, shipping, and aviation, which the Philippines could collectively implement. The action plan laid the groundwork for a coordinated effort to increase efficiencies in both its global and domestic supply chains. In 2016 the workshop took place in Viet Nam and focused on improving the resilience of agriculture and food production-related global supply chains. The key deliverable was a targeted Viet Nam-specific Action Plan Framework, which set out a series of practical, implementable actions to guide the development of resilient supply chains and reduce the economic and social costs of natural disasters. In 2017 the workshop took place in Papua New Guinea and focused on petroleum and agribusiness, and much of the discussions centered around coffee and fresh produce supply chains.

5. NEW CONCEPT NOTES DISCUSSION

5.1 New Self-Funded Proposal

Self Funded Study on “A Review of Impacts by the New SOLAS Verified Gross Mass (VGM) Rules on Intermodal Container Movements and Best Practices to Maintain and Enhance the Supply Chain” – Chinese Taipei

Chinese Taipei presented an overview of the self funded study on the new IMO SOLAS Verified Gross Mass (VGM) rules and its potential impact on the supply chain. The Chinese Taipei study team will be reviewing each APEC economies' practice and procedure in implementing the new rules and identifying a list of best practices to share for information. The study will also involve a number of surveys and questionnaires to key stakeholder throughout the supply chain such as shipping lines, terminal operators, freight forwarders, shippers, and trucking companies on their experience and feedback regarding the implementation of the new SOLAS VGM rules. IIEG fully endorsed this study.

Developing Value-Added Ports through Enhancing Ports Logistics Services to Promote the Economic Integration in the APEC Region - Chinese Taipei

Chinese Taipei presented a new concept note for developing value added ports through enhancing port logistics to promote the economic integration in the APEC region. This is a concept note to be put forward for endorsement through the Maritime Expert Group (MEG). IIEG looks forward to review the concept note for comments and endorsement as well.

5.2 APEC Project Director’s Remark

APEC Project Director Mr.Pavel Bronnikov provided a briefing at the meeting on the project overview, the establishment of new sub-funds, the procedure of undertaking the self-funded APEC projects, and the new approval process of Concept Notes that would take effect from project session 1, 2018. Mr.Pavel Bronnikov also provided key advices on developing Concept Notes and project implementation.

5.3 Roundtable Discussion on Developing a Concept Note

No new Concept Notes were presented at this meeting for APEC funding. The IIEG Chair introduced the Concept Notes life cycle, and funding criteria for APEC-funded projects, summarized and analyzed the submission of Concept Notes by IIEG from 2010 to 2016, as well as the Concept Notes approved and not approved with APEC funding during this period. The IIEG Chair also encouraged IIEG members to consider new project proposals for session 2 funding applications in 2017. A roundtable discussion was held on the new possible projects and activities related to the IIEG, Leaders’ and Ministers’ directives, as well as other APEC priorities.

6. ECONOMY REPORTS

IIEG regards it more and more important for economies to share information in the fields of intermodal and ITS developments. Twelve economies presented an economy update on various intermodal and ITS developments in their respective economy.

- **Canada**

In November 2016, Canada's Minister of Transport Marc Garneau announced "Transportation 2030 – A Strategic Plan for the Future of Transportation in Canada". This plan was developed based on the "Future of Transportation" public consultation feedback in 2016 and also findings from the 2015 Canada Transportation Act Review.

Transportation 2030 groups areas of work under five themes, which span modes of transport such as air travel, ships, trucks and trains; and activities such as setting and enforcing regulations. This strategy allows Transport Canada to take a "whole system" view to make sure that all parts of Canada's transportation system work well together to support broader government priorities. The five themes of the Transportation 2030 Strategic Plan are: The Traveller; Safer Transportation; Green and Innovative Transportation; Waterways, Coasts and the North; Trade Corridors to Global Markets

The themes on "Green and Innovative Transportation" and "Trade Corridors to Global Markets" have a direct linkage to the mandate of the IIEG. Under the "Green and Innovative Transportation", one of the initiatives is to support the safe and rapid deployment of connected and automated vehicles on the public roads to improve road safety; reduce congestion; increase mobility; protect the environment; and support economic opportunities for Canadian businesses.

Under the "Trade Corridors to Global Markets" theme, Canada will make infrastructure investments to address urgent capacity constraints, freight bottlenecks, and connect rail and highway infrastructure through a new \$2 Billion "National Trade Corridors Fund" program. This program will also be supported by a new Trade and Transportation Information System by Transport Canada, which will be a new Canadian Centre on Transportation Data with authoritative sources of multi-modal transportation data and performance measures to aid with government decisions making. Canada will also establish a new Canada Infrastructure Bank to invest \$5 billion for trade and transportation corridors projects and to look at new ways to finance infrastructure projects in partnership with other levels of government and the private sector.

More information on the Transportation 2030 Strategic Plan can be found at <http://www.tc.gc.ca/eng/future-transportation-canada.html>

- **China**

China focuses on the development of new business type in the logistics sector and the impact on multimodal transport. With the rise of new information technology, a group of “platform type” enterprises have emerged which consolidate and pool the small road transport companies and remake the organization of mode of logistics. While there are much positive implications of these enterprises, challenges and problems also arise due to inadaptability to existing laws and regulations, and insufficient information sharing of government and big operators. The Chinese government will dedicate to promote the mutual and coordinated development of new business type and multimodal transport by improving governance and updating transport infrastructure.

- **Japan**

Japan reported the implementation of "Logistics Comprehensive Efficiency Law" that came into force in October 2016. The goal of this law is to promote modal shift, regional cooperative delivery and consolidation of transportation network by implementing the comprehensive efficiency plan by logistics companies.

- **Republic of Korea**

The Ministry of Land, Infrastructure and Transport of Korea (MOLIT) aims to secure traffic safety and seamless traffic flow by introducing several ITS services that described as below;

- Incident Direct Alert Service: The service contributes to prevent secondary accident by delivering time incident information to drivers. Now the service is being improved by cooperating with private navigation services, to satisfy and attract more people.
- Traffic-actuated Signal System: An automated system that allocates signal time flexibly by considering real-time traffic flow of each direction. The Republic of Korea has been implementing pilot projects in several cities, based on master plan for traffic-actuated signal system, that was established in November 2014.
- Cooperative ITS: C-ITS pilot project is in progress since July 2014, to improve quality of developed technologies and services. The pilot deployment aims not only to strengthen the basement of C-ITS main deployment in near future, but also to help revision of relevant law & regulation. In addition to the pilot deployment, MOLIT is considering to open a part of pilot area to private sector, to use it as test-bed for development of C-ITS and Autonomous Vehicle.
- Traffic Forecast: Aims to help drivers to choose most appropriate route for their journey, by considering forecast of traffic flow at the moment of their departure time.
- Integrated Signal Control System: Aims to centralize traffic signal management to have seamless traffic signal system in economy-wide level.
- Parking Information Service & Hi-Pass Pay: Aims to provide real-time parking information and navigate drivers to empty parking lot, and provide electronic payment system for parking fare, so that contribute to relieve traffic congestion in urban area.

- **Malaysia**

Malaysia updated the meeting regarding their current ongoing initiative which is the “Malaysia’s Logistics & Trade Facilitation Masterplan”. The Masterplan, setting out 5 strategic shifts and 21 action items, is Malaysia’s overall initiative to transform the logistics and trade facilitation sectors. The Masterplan will be implemented in three phases that will address bottlenecks, promote domestic growth and create a regional footprint in the logistics sector. To ensure certainty of implementation, initiatives proposed in the Masterplan will be part of the Eleventh Malaysia Plan, 2016-2020. Strategic and proactive measures to strengthen the logistics industry are expected to result in significant spin-off for Malaysia, in the form of increased business investment, higher employment rate and reduction in the cost of doing business. Huge challenges remain ahead toward the next phase of the Masterplan. Several key initiatives or projects have been identified that could further continue Malaysia’s competitiveness in the global economy. This includes the Digital Free Trade Zone (DFTZ) in KLIA Aeropolis, East Coast Rail Line (ECRL), Pulau Carey Port-Industrial City Project, Leveraging on E-commerce Logistics and improving last-mile connectivity to Port Klang.

- **New Zealand**

The New Zealand Government has a programme of work underway to put in place the building blocks so that New Zealand is ready to take advantage of beneficial Intelligent Transport Systems (ITS) technologies as they become widely available. In particular we are focussing on supportive regulation, testing and trialling, and the necessary infrastructure to support deployment. The work is summarised in an ITS Technology Action Plan which is currently being reviewed. This will help ensure that we keep up to date with technology developments and that across government we are focussing our efforts in the right places. We have also identified the ITS applications that we believe will make the greatest contribution to the Government’s transport objectives.

The Government is encouraging the testing of automated vehicles, as well as other technologies in New Zealand, in order to facilitate our early adoption of beneficial technology. New Zealanders are early and keen adopters of new technology. The Government hopes that supporting the testing of new technology such as autonomous vehicles in New Zealand will have benefits for the economy and encourage rapid uptake once they are commercially available. A particular advantage of testing autonomous vehicles in New Zealand is that our legislation does not explicitly require a vehicle to have a driver present for it to be used on the road. So long as any testing is carried out safely, a truly driverless vehicle may be tested on public roads today. New Zealand is currently the location of the only vehicle winter-testing facility in the Southern Hemisphere. A driverless shuttle is now being tested at Christchurch Airport. New Zealand has also introduced what is considered to be a world-leading safety regulatory regime for unmanned aerial vehicles (UAVs) and has seen UAVs used to demonstrate courier deliveries.

New Zealand is collaborating with Australia on a two-year trial programme of a satellite-based augmentation system (SBAS) running until January 2019. The test-bed will include current- and next-generation SBAS as well as precise point position (PPP). The trial programme will involve 10 user sectors, including air, sea, road and rail transport. This will help to quantify the benefits of SBAS in order to make a business case to the two governments for a permanent service.

- **Papua New Guinea**

The Government of PNG is currently focused on maintaining its existing transport infrastructure where priority roads are being maintained, especially the major highways, airports and sea ports. Currently there is ongoing major maintenance and bridge replacement programs being rolled out at all the major highways, including the all important Highlands Highway which is the economic life line to PNG.

Focusing on the capital city, Port Moresby given congestion issues as well as part of preparation for TMM10 and APEC 2018 in PNG, the City Authority in partnership with Government invested over K800 million in the last two years on upgrading existing roads as well as on-going construction of new arterial roads connecting major suburbs and new housing estates on the peripheries including the roads leading into and out of the city at additional cost of K1.3 billion.

In the maritime area, Lae Port which is the major trade hub has been upgraded and expanded to increase its capacity and capability to reduce turn-around times for foreign-going vessels. The second phase of the Tidal Basin development has now progressed to tender stage to complete the whole redevelopment of Lae Port for seamless performance of its operations. Port Moresby Port which is the second biggest has now been relocated to a new site at Motukea after signing the Transfer Agreement with the private operators, last year. Other major ports like Kimbe, Alotau and Wewak are also being upgraded to cater for activities in economic growth and vessel berthing requirements.

In the Aviation space, the Jacksons International Airport in Port Moresby is being upgraded using PPP Concept through ADB Loan facility where the loan agreement was recently signed to let tender and commence work. Other major airports such as Madang, Goroka, Mt. Hagen and Tokua which will play host to some side activities during PNG's Host year in 2018 will also be upgraded in the near future. Just recently, the PNG Air Services Limited launched the GNSS Approach on 24th March, 2017 with Australia Government's support of K1.8 million to design and deliver new instrument approach landing Charts for up to 45 key airports in PNG. The satellite based technology will provide the aviation industry with enhanced safety and operational efficiencies that will contribute to socio-economic and environmental benefits to PNG.

Consistent with APEC Leaders' Directive on "Connectivity Blue Print 2015-2025" the PNG Department of Transport is undertaking a project titled "Transport Intermodal Connectivity" which is to conceptualize key transport policies articulated in PNG's Transport Strategy from which "Potential Programs or Projects" can be identified. The project's theme "NGI Connectivity for Our Future" is consistent with the APEC Intermodal Connectivity and makes a lot of sense as there has to be connectivity within our domestic economies as well as at the regional economy-level. The NGI intermodal connectivity proposal of course will put into practice some key transport principles and policies into tangible programs and projects and the NGI region was chosen because it is serviced by the three modes of transport – Air, Land and Sea.

In conclusion, the outline of developments in the transport sector in PNG provided in this Economy Report will be critical to PNG hosting important events like TMM10 in

October this year and the APEC SOM's with side meetings that will culminate into the Leaders' Summit in 2018.

Thank you and we look forward to receiving you all in Port Moresby (PNG) for TMM10 and all APEC deliberations during our host year in 2018.

- **Russia**

The Russian Federation presented the Unified Intelligent System for Control and Automation of Production Processes in Railway Transport. Currently, JSC Russian railways has solved the following complexes of interrelated tasks on the basis of intelligent technologies:

- Standard train schedule
- Settled train schedule options
- Traffic control of trains
- Simulation of station operation
- Regulatory reference providing of the station operation
- Station operation planning

In the near future, within the framework of the development of the ITS, the following measures will be undertaken:

- implementation of the concept of "smart locomotive" and "smart train";
- development of solutions for improving the efficiency and reliability of the collection and processing of primary data on production processes;
- a phased transition to the application of Big Data technologies, as the data on the transportation process as well as rolling stock and track diagnostics is being accumulated.

- **Singapore**

Expressway Monitoring and Advisory System (EMAS)

The Expressway Monitoring and Advisory System (EMAS) is an effective incident and traffic management tool comprising live video surveillance, incident detection and real-time traffic alert functions via Variable Message Signs (VMS). The existing EMAS for expressway was enhanced to improve the traffic incident management capabilities to serve motorists better. The enhancement had improved the incident detection and data quality. In-addition, it had also improved the readability of the messages on the VMS and allowed motorists to make better informed travel decisions through graphical and colour representations. The VMS is equipped with energy-savings feature resulting in operational cost savings.

All expressways had successfully completed the enhancement works in April 2017. At the same time, graphical messages and colour-coded travel time information had successfully been launched on the VMS prior to entry and along the expressways.

Singapore Autonomous Vehicle Initiative (SAVI)

The Singapore Autonomous Vehicle Initiative (SAVI) is a technical platform for industry partners and stakeholders to conduct research and development (R&D), and test-bedding of Autonomous Vehicle (AV) technology, applications and solutions. Through this initiative, the Land Transport Authority (LTA) plans to explore AV Mobility Concepts for Singapore Land Transport System with the aim of achieving the vision of reduced demand for car ownership, optimised road capacity and reduction of manpower reliance.

From January 2015, demarcated routes in One-north have been identified as the first public road network in Singapore for the testing of driverless vehicles. These test routes comprise both light and heavy traffic routes. The road network allows for real traffic conditions to test the AV's navigation controls. The Institute for Infocomm Research under the Agency for Science, Technology and Research, the Singapore-MIT Alliance for Research and Technology (SMART), nuTonomy and Delphi Automotive Systems have applied for and been granted approval to carry out testing of their self-driving technology on these routes.

To enable Singapore to move closer to its goal of deploying AVs for shared transport, LTA and JTC Corporation, in partnership with the Nanyang Technological University (NTU Singapore), launched the Centre of Excellence for Testing & Research of AVs – NTU (CETRAN) and Test Circuit at CleanTech Park on 1 August 2016. CETRAN will spearhead the development of testing requirements for AVs, as there is currently no existing international standard. This would allow AVs to be integrated with existing road traffic, which is an important step for widespread deployment of AVs. These efforts will be supported by the 1.8-ha CETRAN Test Circuit, jointly developed by LTA and JTC to provide a simulated road environment for the testing of AVs prior to their deployment on public roads.

Next-Generation Electronic Road Pricing System

The tender to develop the Next-Generation Electronic Road Pricing System, based on Global Navigation Satellite System (GNSS) technology, was awarded to the consortium of NCS Pte Ltd and MHI Engine System Asia Pte Ltd on 25 February 2016.

The Next-Generation Electronic Road Pricing System will be rolled out by 2020 and will replace the current gantry-based Electronic Road Pricing System, which had been in operation since 1998. The Next-Generation Electronic Road Pricing System relies on satellite navigation technology instead of physical gantries and provide island-wide coverage with the ability to charge fees for distance travelled.

Under the Next-Generation Electronic Road Pricing System, vehicles will have a new On-Board Unit (OBU) which will replace the existing In-Vehicle Unit (IU). The OBU will provide additional services to motorists such as real-time traffic information, automatic charging for off-peak car usage, coupon-less parking etc. The OBU will support payments via contactless stored-value cards, credit and debit cards, and direct debit from bank accounts.

- **Chinese Taipei**

Chinese Taipei launched its new 4-year ITS Plan between 2017 to 2020. Six main programs will be implemented in Chinese Taipei at selected regions to overcome the transport challenges, which are recurrent road congestions on the main corridors, high traffic-related injuries and deaths, inconvenient public transport service in rural areas, and response to the new technology opportunities by adopting ITS technologies.

The programs in Chinese Taipei's ITS Plan include the integrated corridor management (ICM) program, the rural area advanced public transportation program, the ITS safety program, the MaaS (mobility as a service) program, the connected vehicles program and the ITS R&D (research and development) program. More than US\$ 100 million new budget will be invested in this ITS Plan. The planning philosophy and policy formulation of Chinese Taipei's ITS Plan 2017- 2020 are highlighted. The target of the next four-year ITS plan in Chinese Taipei is to conquer the three challenges and to fulfil the motto of a 5-S transport system –Safe, Smooth, Sharing, Seamless and Sustainable.

Mobility as a Service (MaaS) is one of the most important programs in the ITS Plan. Chinese Taipei will build and operate MaaS platform in 2017, which may be the first economy in APEC to provide integrated transport service by using a digital interface to source and manage the provision of transport related services which meet the mobility requirements of a customer. The purposes of MaaS is to trigger behavior change by switching travel mode choice from private vehicle (car and motorbike) to public transport and alternate means of transport and to reduce car and motorbike dependence. This is in accordance with APEC TPT-WG IIEG's aim to promote intermodal transport integration and to provide a safe, secure, efficient and sustainable transport service. Chinese Taipei hopes to share their ITS experience with all APEC economies in the near future.

- **Thailand**

Thailand's Economy Report focus on the implementation of Common Ticketing System Development. The Economy is pursuing on improvement of public transport systems with high priorities on the development of Mass Rapid Transit Network. The Common Ticketing System (e-ticket) aims to enhance the overall efficiency and connectivity of public transport system in Bangkok and Greater Bangkok Region as well as encourage ridership on public transport system including Mass Rapid Transit (MRT), buses, express boat and expressway. The Common Ticketing System will be used for both transit and non-transit sectors.

Thailand is accelerating the implementation process of Common Ticketing System by the end of 2017. The first phase of e-ticket implementation will be applied with existing MRT lines and public buses. The second phase of e-ticket implementation will expand to all public transport system including expressway, by the end of 2018. The later phase will apply the e-ticket to new MRT lines.

- **United States**

The United States reminded the IIEG about a previous proposal for consideration, which is for APEC TPT-WG to facilitate “research twinning” amongst APEC Economies. The United States is still exploring the possibility of “research twinning” with the European Commission and believes that this may also be a good activity for the IIEG to lead within the TPTWG. “Research twinning” is the coordination of research projects of similar scope, objectives, and timeline that are aligned to run in parallel, in an integrated manner, for the mutual benefit of two APEC Economies. “Research twinning” would not require the transfer of funds between APEC Economies. It is a mechanism whereby research areas of common interests could be explore more comprehensively through intellectual inquiry, which would help to facilitate similar methodologies deployed and similar data sets collected.

The United States believes that autonomous/connected vehicles is an example of intellectual inquiry that would benefit from “research twinning” amongst APEC transportation ministries, though there are likely other topics that would benefit well. At a time when governments need to leverage their limited research funds for maximum benefit, “research twinning” can facilitate more robust intellectual inquiry than a single APEC Economy may be able to pay for alone.

- **Viet Nam**

On February 24, 2017 Prime Minister of Viet Nam has approved the Decision No. 200/QD-TTg on approval of the action plan for Development of Logistics to Enhance the economy's competitiveness by 2025.

There are major tasks in the action plan including:

- (i) improving policies and laws on logistics services,
- (ii) completing the logistics infrastructure,
- (iii) strengthening business capacity and service quality,
- (iv) developing the market of logistics services,
- (v) training, raising awareness and quality of human resources.

Regarding the transport sector, the Ministry of Transport of Viet Nam will take further actions, such as

- reviewing master plan,
- ensuring harmonization between transport infrastructures and logistics,
- strengthening cooperation for logistics infrastructure and connectivity,
- extending investment of logistics infrastructure to connect Vietnamese ports to neighbors (logistics centers along road corridor to ports of VN connecting to Laos, Cambodia, Thailand and Southern China) to increase the use of multi-modal and cross-border transport, especially for transit cargo;
- restructuring among transport modes to better satisfy transport demand;

- strengthening maritime transport capacity; and,
- developing aviation logistics centers (key airports) for special products.

- **Macao, China**

Macao, China introduced their development of Land Intelligent Transportation System (ITS). 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, the ITS is mainly focusing on helping Public Transport work smoothly.

Macao ITS includes some sub-systems like Traffic Light Control System, Traffic enforcement system, Traveling Information System and Traffic Video Monitoring Central Dispatching System. As bus plays an important role in public transport of Macao, it has Bus RFID System and Bus Management System to monitor the operation of bus. Based on these two systems, Transport Bureau released the Bus Traveling System (Mobile App) in 2016. It has been successful in Macao that many passengers downloaded and used this app to travel by bus in a more efficient way.

7. SPECIAL SESSION ON GNSS TECHNOLOGY AND APPLICATIONS

IIEG and GNSS Implementation Team (GIT) held a joint session and received six presentations on GNSS technology application for Intermodal and Intelligent Transportation System Applications.

- Satellite Base Augmentation Systems(SBAS)
- Unmanned Aerial Systems
- Applications of Automatic Identification System (AIS) on Air Quality Management
- GNSS Applications Experiences of Cross Border Cold Chain Logistics
- Positioning Issues of Connected Vehicles and Autonomous Vehicles
- GNSS Applications of Fleet Management and Internet of Things

IIEG and GIT will conduct future joint session on topics of common interest.

8. APEC GNSS IMPLEMENTATION TEAM (GIT) REPORT

UNITED STATES/ CHINESE TAIPEI

The 22nd Meeting of the Asia Pacific Economic Cooperation (APEC) Global Navigation Satellite System (GNSS) Implementation Team (GIT/22) was hosted by Chinese Taipei from 25-28 April 2017 in conjunction with the 44th APEC Transportation Working Group (TPT-WG) meeting. Eight APEC Economies, namely China, Japan, Republic of Korea, New Zealand, Russia, Chinese Taipei, Thailand, and the United States participated in GIT/22 meeting. The GIT/22 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 an update on the APEC GIT website. Presentations also included economy reports on GNSS implementation in APEC economies, covering GNSS applications in air transportation including

discussion of the cost and benefits analysis of a regional Satellite-Based Augmentation System (SBAS). Updated information on GNSS constellations and augmentation systems was provided with a report on Beidou from the People's Republic of China, QZSS and MSAS from Japan, KASS from Republic of Korea, GPS, WAAS, and NDGPS from the United States, and GAGAN from India which were well received by the GIT.

A special session on GNSS technology and applications is held to cover GNSS applications in weather forecasting, unmanned aerial systems, maritime, intermodal transport, and intelligent transport systems. During this special session, GIT has joint meeting with aviation safety sub-group (AEG-SAF), and intermodal and intelligent transport system (IIEG) to discuss possible cooperation and project proposals on topics of aviation weather, and intermodal transport and intelligent transport systems, respectively.

9. 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 Chinese Taipei in hosting the APEC TPT-WG 44 meeting. In particular, the IIEG thanks the officials of Chinese Taipei for their excellent support to the IIEG.

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

ATTACHMENT A - IIEG MEETING ATTENDEE LIST

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ATTACHMENT B - THE INTERMODAL AND ITS EXPERTS GROUP TERMS OF REFERENCE

1. Background

Together with other APEC Transportation Working Group (TPT-WG) Expert Groups [Aviation; Maritime; and Land], the Intermodal and ITS Expert Group (IIEG) contributes to TPT-WG's objectives that promote a safe, secure and efficient transportation system. These objectives promote the Bogor Goals of free and open trade and investment in the APEC region. The TPT-WG also strives to ensure that transportation systems in the APEC region are both seamless and environmentally-friendly through the application of innovative and advanced technologies that reduce congestion and enhance transport safety, security and sustainability.

The IIEG is a forum of member economies to promote and facilitate the implementation of an integrated intermodal transportation system and Intelligent Transportation Systems (ITS) in the Asia Pacific Region. The IIEG undertakes activities, initiatives, and projects in response to directives from APEC Leaders and Ministers; APEC priorities developed by Senior Officials, SOM Steering Committee on Economic and Technical Cooperation (SCE), and the APEC TPT-WG Lead Shepherd. The IIEG will conduct its work in compliance with APEC policies and procedures.

There is one sub-group within the IIEG, which is the Global Navigation Satellite System (GNSS) Implementation Team (GIT). Please visit <http://www.apecgit.org/> for more information.

2. Objectives

The IIEG contributes to an efficient, sustainable, and integrated intermodal transportation system to facilitate trade within the APEC region; and promotes and facilitates Electronic Commerce, ITS, Satellite Navigation Systems, and other advanced innovative technologies application in the transportation systems. The contributions of the IIEG to the TPT-WG are underpinned by four “pillars”



3. Scope of Work

Most of the work conducted by the IIEG members are either through self-funded or APEC-funded initiatives that could include:



All economy who wish to submit a Concept Note for APEC funding consideration must submit it through the IIEG chair in order to share with IIEG members for reviews and comments. Once the IIEG members agrees the Concept Note aligns with the IIEG objectives and scope, then the IIEG chair will submit the Concept Note to the Lead Shepherd Office for endorsement and prioritization.

The IIEG recognizes that these transportation issues and initiatives related to supply chain, ITS, and innovative technology may complement the work done by other APEC fora and international multilateral agencies, to name just a few, such as the

- Asia Development Bank (ADB),
- World Bank Transport Division,
- International Transport Forum (ITF),
- United Nations Conference on Trade and Development (UNCTAD),
- International Civil Aviation Organization (ICAO),
- International Maritime Organization (IMO),
- Universal Postal Union (UPU), and
- World Customs Organization (WCO)

IIEG will seek to establish and foster cross-fora collaboration whenever possible.

4. Meeting

The group will normally meet during the APEC TPT-WG sessions and shall report back to HODs of the APEC TPT-WG.

5. Membership

Each APEC economy is encouraged to appoint two or more representatives with expertise in the intermodal and ITS sectors if possible. They are encouraged to actively participate in technical and policy oriented discussions and undertake both APEC funded and self funded projects to advance IIEG objectives.

Please refer to the APEC Non-Member Participation Guidelines if any member economy wishes to invite an external agency as a guest to present and attend the IIEG meeting. The member economy should also inform the Chair prior to the meeting with the guest invitation.

6. Roles and Responsibilities

Chair (with assistance of a secretary, if available):

- Chair the IIEG meetings;
- Manage the business of the IIEG meetings, such as preparing meeting agendas, final report, IIEG contact list, and circulating all meeting documents to all IIEG representatives and observers;
- Represent the IIEG at TPT-WG Plenary and HODs Meetings;
- Review and coordinate the submission of concept notes;
- Liaise with HODs, the Lead Shepherd, the Deputy Lead Shepherd, the APEC Secretariat, and other Expert Group Chairs to discuss TPT-WG related activities; and,
- Be the point of contact with other organizations having a mandate for intermodal or ITS related topics.

Deputy-Chair:

- Carry out duties identified collaboratively with the Chair; and,
- Carry out the duties of the Chair whenever the Chair is unavailable, such as representing the IIEG at Plenary and HODs Meetings;

Members:

- Further to necessary domestic consultations, representing their Economy on all relevant agenda items;
- Respond to proposals and recommendations;
- Brief their Head of Delegation as required;
- Prepare Concept Note;
- Conduct self funded or APEC funded projects as required;
- Actively participate in meetings and email/online discussions on all intermodal and ITS related discussions and activities; and,

- Inform the IIEG Chair, Deputy Chair and the APEC Secretariat regarding changes in their respective economy's representative and contact information.

The Chair and Deputy Chair are elected by the consensus of the IIEG members for a period of 2 years. At the end of the 2-year term, the Chair will solicit interest within the IIEG members for a volunteer to be the Chair or Deputy Chair. There is no limit as to how many terms an economy member can serve as Chair or Deputy Chair.

In the event the economy member cannot fulfil the Chair duty (e.g. new job or workload issue), then the Deputy Chair will act as the Acting Chair for the remainder of the 2-year term. Again, at the end of the 2-year term, the Acting Chair will solicit interest among the IIEG members for a volunteer to be the IIEG Chair.

In the event the economy member cannot fulfil the Deputy Chair duty (e.g. new job or workload issue), then the Chair will solicit interest within the IIEG to take up the role of Acting Deputy Chair for the remainder of the 2-year term. Again, at the end of the 2-year term, the Chair will solicit interest among the IIEG members for a volunteer to be the IIEG Deputy Chair.