

Asia-Pacific Economic Cooperation (APEC) Innovation in Public Transportation (INPUT) Competition

Competition Plan

1. Competition Background

1.1 Introduction to INPUT

In order to actively promote academic exchange among APEC economies and cultivate the spirit of scientific and technological innovation alongside enhancing the practical abilities of students and professionals of the field, with the approval of APEC and the full support of the Ministry of Science & Technology of China and the Chinese Academy of Sciences, the *APEC Innovation in Public Transportation (INPUT) Competition* will be officially launched in September 2020, with a finalist presentation platform, awards ceremony and exchange forum to be held in Shanghai, China, in May 2021.

With urbanization steadily increasing around the world, the interdependent relationship between urban development and public transportation systems is getting closer and closer. This competition will broadly cover the role urban public transportation systems (metropolitan rail, urban light rail, and medium to small volume public transit modes) in the future of cities, with a particular focus on public transport system interconnection and integration using intelligent technology advances (including wireless Internet, cloud computing, artificial intelligence, blockchain applications and augmented reality) as its driving force.

It is hoped that scientific and technological innovation, collaboration and transformation within and between APEC member economies' public transport industries will be encouraged through the INPUT Competition, which will ultimately promote intelligent

ecological construction throughout the entire Asia-Pacific region to achieve green and sustainable economic eco-system.

1.2 Introduction to APEC

The Organization for *Asia-Pacific Economic Cooperation (APEC)* was established in 1989. It is an important organization that promotes economic integration throughout the Asia-Pacific, promoting regional trade and development. There are currently 21 member economies: Australia, Brunei, Canada, Chile, China, Hong Kong China, Indonesia, Japan, South Korea, Mexico, Malaysia, New Zealand, Papua New Guinea, Peru, Philippines, Russia, Singapore, Chinese Taipei, Thailand, United States, and Viet Nam.

1.3 Introduction to PPSTI

The *Policy Partnership on Science, Technology and Innovation (PPSTI)* is a key working group under the APEC Senior Officials' Steering Committee for Economic and Technical Cooperation (SCE). It aims to promote policy dialogue on scientific and technological innovation between political, industrial, academic, and research institutions, and to develop relevant policy recommendations and initiatives.

Its strategic objectives are to support the commercialization of innovations, enhance innovation capabilities, promote innovation cooperation among members, develop a market-led policy environment conducive to innovation, promote economic growth, promote trade and investment, and achieve social harmony and sustainable development.

1.4 APEC Project Support

The INPUT Competition is a project approved and supported by the APEC Policy Partnership on Science, Technology and Innovation (PPSTI) in 2020-2021.

Project Lead Economy: People's Republic of China

Project Co-Sponsoring Economies: Chile, Hong Kong China, Indonesia, Papua New Guinea, Peru, Philippines, Thailand, Viet Nam

2. Competition Scope

2.1 Competition Theme

“The Intelligent Integrated Development of Multi-Modal Public Transportation”

This competition will be based on the theme of "Intelligent integrated development of multi-modal public transportation" and will be divided into two *application groups*:

(A) Engineering Design & (B) Technical Research.

Under these groups, suggested directions for participating applicants to the competition would include but are not limited to:

1. Multi-modal metropolitan area transportation integration (integrated planning, transportation facilities, transportation services, operation management, mechanism and systems integration);
2. Green-led, seamlessly connected, high-quality services and intelligently managed public transportation systems driven by technological innovation;
3. System, technology, product and service solutions aimed at benefitting women, in addition to children, the elderly and people with disabilities;
4. The interconnection and seamless integration of new transportation systems with conventional public transportation systems;
5. Construction of comprehensive transportation hubs, seamless connections of main line traffic and terminal traffic, and point-to-point services;
6. New materials, technologies and products for public transportation based on intelligent IT technology (wireless Internet, cloud computing, artificial intelligence, blockchain, augmented reality and virtual reality).

2.2 Participants

Enterprises, universities, and scientific research institutions related to the urban public transport industries of the 21 member economies of Asia-Pacific Economic Cooperation (APEC) are invited to form teams to participate in the competition, and share smart achievements through exchanges and interactions.

In order to ensure the fairness of the competition and reflect the expertise of all parties,

this competition will be divided into college groups and enterprise groups. Each competition team can choose one of the groups according to the composition of its own team.

2.3 Competition Timeline

The competition will be officially launched in September 2020, with finalist presentations, the awards ceremony and exchange activities to be held in Shanghai on May 25-26, 2021.

2.4 Finalist Travel Allowances

Funding has been raised for the final stage of this competition by the competition organizers. The travel expenses of two selected competition finalist team members will be covered by the organizers, as well as the provision of working meals at the competition event. The competition has awards and prizes.

3. Entry Instructions

3.1 Participation Language

The competition will use the official APEC common language: English. The required language for the written materials provided by the participating teams is English.

3.2 Work Content & Group Settings

Entries should focus on the theme of "intelligent integrated development of multi-modal public transportation" in the competition, aiming at the specific problems of mass transportation systems, using technical and research expertise in the field to propose novel, feasible, practical solutions that address specific challenges, issues or difficulties. Works can be physical models, research reports, design drawings or computer software.

(A) Engineering Design Application Group

This competition category encourages submitted works to consist of physical product prototypes, models or schematics. Guided by key technologies such as 5G, artificial intelligence, machine learning, high-end equipment manufacturing, and big data analysis, and aimed at solving practical problems in public transportation, its applicants will practically demonstrate innovative solutions.

(B) Technical Research Application Group

This competition category requires the submission of research papers or research reports. Participating project applications will include scientific research in the field of urban public transportation, concentrating on mass transit construction, operation, intelligent operation and maintenance management, or other interdisciplinary fields. Application research content should have a strong systematic and theoretical basis and be forward-looking.

3.3 Work requirements

All entries should be original works completed independently by eligible participants, and all participants must make a commitment to the originality of the submitted works.

3.4 How to Apply

- a) The competition will only accept the works of enterprises and universities established within APEC's member economies;
- b) There must be no more than 5 people completing each work, with no more than 2 teachers or engineers involved.
- c) Please fill in the application form provided and write a research report or thesis, or create a physical model or product.

3.5 Competition Schedule

The schedule of the competition is as follows:

No.	Time	Matter	Responsibility
1	Late July 2020	Send out invitation letters	Organizing Committee
2	Late October 2020	Receipt of participating institution acceptance letters	Participating Institutions
3	Early March 2021	Submission of applicant progress information	Participating Institutions
4	Mid-April 2021	Submission deadline for applicant competition entries	Participating Institutions
5	Mid- to Late April 2021	Preliminary review of applicant entries	Organizing Committee
6	Early May 2021	Announcement of the shortlist of finalists	Organizing Committee
7	Early to Mid-May 2021	Preparation of work instructions and related documents	Participating Institutions
8	May 25-26, 2021	Competition finalist presentations and awards ceremony	Organizing Committee

3.6 Assessment for Each Stage of the Competition

1. **Preliminary Stage:** The competition will organize experts from worldwide to conduct anonymous remote reviewing of submitted work entries. The review process will take into consideration the approach of applicant work entries to the theme of the competition and the quality of the works themselves.
2. **Finalist Stage:** A certain number of works will be selected as finalists, and the first, second, and third prizes of the competition will be determined following finalist presentations, with remaining finalist works to be commended as outstanding works.

The organizers will provide a platform for finalist presentations of their submitted works, whereby applicants will be required to defend their works alongside other finalists within the two competition application groups.

3. **The Presentation Process:** Participating finalist teams will participate in competition presentations to effectively defend their works. These presentations will be divided into the presentation stage, where representatives of finalist teams will introduce the work of the team to the judges and are requested to highlight the key content of the work, the technical route taken and the novel aspects of its innovation; and the inquiry stage, consisting of answering questions from the judging panel of experts. Each of the two application groups will have a first, second and third place prize.
4. **Adjudicating Panel:** The expert panel of judges will be composed of 5 esteemed industry leaders, with all panelists to adhere to a strict code of ethics to avoid any conflict of interest with the submitted entries of participating institutions and organizations. The judging panel will be composed of members of the competition's advisory committee and senior industry experts recommended by them.

3.7 Timetable for Submitting Information to the Organizing Committee

No.	File	Reporting Time	Description	Remarks
1	Receipt of invitation letter	by October 31, 2020		Mail, fax or email
2	Progress of entries	March 1-15, 2021	Work Briefing	Email
3	Entry recommendation form	April 1-15, 2021	Works need to be reviewed and shortlisted	by mail or fax
4	Entries submission form	April 1-15, 2021		Mail
5	Documents (including papers) of the entries	April 15-20, 2021	Print and electronic versions are required	Mail and e-mail
6	Original statement and authorization to use the works	April 1-15, 2021	Print version	Mail
7	Manuals and related documents of the entries (optional)	May 24-26, 2021	Print version	Submit at check-in

3.8 Other Instructions

The competition organizing committee reserves the right to hold any submitted work entry description documents and papers on file, which will allow panelists to review and shortlist entries; the competition organizing committee can also publish all or part of the description documents and the papers of the entries, and can save their content by copying, editing or other means as necessary to fulfill the competition objectives.

3.9 Awards Ceremony

The finalist works will be selected in an appropriate fashion in line with competition terms of reference through remote assessment of works (the total number of finalists is not to exceed 30 works).

The college group and the enterprise group shall have one first prize, two second prizes and three third prizes each.

Award Certificates will be issued by the APEC Secretariat.

First Prize: RMB 10,000

Second Prize: RMB 5,000

Third Prize: RMB 3,000

3.10 Organizing Committee Contacts

China Event Points of Contact:

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For the matters not mentioned above, the power of interpretation and modification belongs to the competition organizing committee.