

## REPORT OF ACTIVITIES: 2020–2023

### 1. Introduction

This report summarises the activities of the Institute of Transport Studies (ITS) at the University of Hong Kong from 1 May, 2020 to 30 April, 2023.

#### 1.1 Background

Transport is important to the people and economy of Hong Kong. With a population of over 7.50 million, many millions of dollars could be saved if we spent less time on transport. If everyone in Hong Kong could save 10 minutes per day using an intelligent transport system—in addition to there being better land use and transportation planning—saving just HK\$1 per minute could save HK\$74.9 million a day and over HK\$27.3 billion a year. The amount saved would be significantly higher if we include the time that can be saved in transporting goods. Transport also affects air quality and environmental sustainability. Our energy efficiency and environment would be far better if we use more public transport, mass transit systems, and burn cleaner fuel. Compared with other cities in Asia, Hong Kong has a very good transport system. That said, there is still a great deal of research necessary to improve the efficiency, equity, safety, comfort, services, and environmental friendliness of its transport system. For example, Hong Kong would become more competitive and have a much better living environment if it reduced the level of pollution from its transport system.

The transport sector has played a fundamental role in the development of Hong Kong and will continue to do so in the future. Hong Kong's status as a global city is largely based on its role as a key hub for international air transport and maritime shipping systems. The city's future development is closely linked to remaining as a major port and airport hub.

#### 1.2 Mission and Objectives

The Institute of Transport Studies is a university centre that seeks to identify research programmes as mission-oriented activities, rather than traditional academic disciplines alone. In doing so, it undertakes the following:

- Establishing a database of academic staff and research students in the university engaged in transport related research, areas of special expertise, and titles of the projects in which they engage;
- Promoting collaboration activities within the university on multi- and inter-disciplinary transport research and the application of research grants;
- Promoting inter-institutional, regional, and international cooperation in transport studies;
- Publicising the university's image both locally and internationally as an institution committed to transport studies in Hong Kong, the region, and worldwide;
- Organising seminars, conferences, and workshops on transport studies.

### 1.3 Major Initiatives and Achievements

Despite the challenging circumstances posed by the Covid-19 pandemic, the Institute has successfully made some remarkable achievements during the review period.

#### 1.3.1 Organising theme-based Distinguished Transport Lecture Series

In light of the Covid-19 pandemic, the Distinguished Transport Lecture Series (DTLS) was forced to pause its in-person events in 2020. However, the Institute swiftly pivoted to an online format for both 2021 and 2022, prioritizing the safety and convenience of all participants. Despite the challenges, the series thrived, hosting six successful events featuring renowned speakers from the U.S.A., U.K., and Singapore. The online events were having resounding success, drawing in 200-400 attendees each time and significantly expanding the reach and impact of the series.

Beginning in 2021, the Institute also implemented a new approach to DTLS, introducing a thematic focus for each year. This change allowed the Institute to invite leading scholars to share their insights and research on topics related to the theme of strategic importance. The themes for the 2021, 2022, and 2023 DTLS events were thoughtfully chosen to reflect current transportation issues and trends. The theme of DTLS 2021, "**COVID-19 and Transportation**," explored the pandemic's impact on the transportation field in a timely manner. The theme of DTLS 2022, "**Transport Decarbonisation**," tackled the important issue of reducing emissions in the transportation sector. Finally, the theme of DTLS 2023, "**Autonomous Vehicles**," delved into the rapidly evolving world of self-driving cars and their potential impacts on transportation. These themes have attracted top experts to speak at DTLS, making each event an invaluable opportunity to learn from and engage with the leading voices in transportation research.

#### 1.3.2 Strengthening Strategic Academic-Industry-Government Partnerships

During the review period, the Institute also further strengthened the strategic partnerships with multiple overseas and Mainland institutes and governments. The following are three prominent examples.

##### 1.3.2.1 International Symposium on High-speed Railway and Regional Development

The International Symposium on High-speed Railway and Regional Development, jointly organised by ITS, University of Liverpool, Jiangxi Normal University, and Computational Urban Science (Springer), was held on 10 May 2022. Professor Becky Loo was one of the Co-Chairs of the symposium. It was conducted online on Zoom and Bilibili. The response to the events was overwhelmingly positive, with over 300 participants registering and an impressive turnout of more than 300 audience members joining from both platforms. This high level of engagement was a testament to the relevance of the themes and the caliber of the speakers, as well as the effectiveness of the Institute's efforts to create an engaging and interactive virtual experience for all attendees.

The symposium provided a platform to discuss various opportunities and challenges of developing and enhancing HSR services (both hardware and software) in future cities. It

brought the latest research worldwide in discerning the nexus among the HSR and regional development from an interdisciplinary perspective, opening the way for planning accessible, efficient, equitable and thus sustainable transport futures.

#### 1.3.2.2 HK-Swiss Symposium on Future Cities

The HK-Swiss Symposium on Future Cities, jointly organised by ITS, ETH Zürich and Joint Lab on Future Cities, was held online in Hong Kong and the Switzerland in parallel on 16th – 17th May 2022. The event took place concurrently in Hong Kong and Switzerland on these two days so to allow real-time interactions of the speakers and audience in both places. The symposium successfully achieved the aim to encourage more exchange among HK and Swiss early career researchers working on issues related to future cities. Miss Yuebing Liang, a Ph.D. student from the Department of Urban Planning and Design and a Student Fellow of ITS, was selected by the assessment panel for the Best Paper Presentation Award in the symposium.

#### 1.3.2.3 Guangdong-Hong Kong-Macao Joint Laboratory on Smart Cities

Fellows of the Institute of Transport Studies (HKUITS) have partnered with the Research Institute for Smart Cities of Shenzhen University and State Key Laboratory of Internet of Things for Smart City of Macao University in successfully bidding for the Guangdong-Hong Kong-Macao Joint Laboratory on Smart Cities (粵港澳智慧城市聯合實驗室) under the 2020 Guangdong Province Technological Innovation Special Fund of the Department of Science and Technology of the Guangdong Province.

The Fund has awarded 10 Joint Labs with an award of 5 Million RMB each this year. Prof. Anthony Yeh (Urban Planning & Design) is one of the leaders of the Joint Laboratory. Members of our interdisciplinary team include Dr Fang Bian (Urban Planning & Design), Dr Zifeng Chen (Urban Planning & Design), Prof. Reynold Cheng (Computer Science), Dr Weifeng Li (Urban Planning & Design), Prof. Becky PY Loo (Geography), Prof. WY Szeto (Civil Engineering), Dr Jiangping Zhou (Urban Planning & Design) and Prof. SC Wong (Civil Engineering).

#### 1.3.3 Fellows Receiving Multiple Awards

During the review period, ITS Fellows have made significant contributions to research and practice in the transportation field, resulting in numerous prestigious awards and recognitions. Their ground-breaking research and innovative approaches have garnered attention and acclaim from the transportation community and beyond. During this report period, ITS Fellows have been honoured with multiple awards, a testament to their expertise, dedication, and impact. These accolades serve as a reminder of the influential role that the ITS Fellows play in shaping the future of transportation and inspiring the next generation of leaders in the field.

- Prof. Anthony Yeh, Member of the Hong Kong Academy of Sciences and Chinese Academy of Sciences and Chair Professor of Department of Urban Planning and Design at the University of Hong Kong, who won a Silver and a Bronze Medal in the 48th International Exhibition of Inventions of Geneva on 28 April 2023.

- ITS Affiliate Fellow, Dr. Si Qiao, for receiving the Transportation Geography Specialty Group (TGSG) Outstanding Thesis and Dissertation Award in the 2023 American Association of Geographers (AAG) Annual Meeting.
- ITS Fellow, Professor Mingxin Huang, for being awarded the 2021 Xplorer Prize for research demonstrating exceptional quality and innovation. Professor Huang's research includes the development of super strong steels and alloys.

#### 1.3.4 Increase in Fellows Elected from Multiple Disciplinary Backgrounds

There are currently 31 Institute Fellows in ITS. The number of Institute Fellows has steadily grown over the years. There were 6 new Institute Fellows elected from multiple disciplinary backgrounds, all of whom are assistant professors from relevant departments of the University of Hong Kong.

Apart from the Faculty of Architecture, the Faculty of Arts, the Faculty of Business and Economics, the Faculty of Engineering, the Faculty of Law, and the Faculty of Social Sciences, there are now Institute Fellows from the Faculty of Medicine and the Faculty of Science. This greatly aligns with the objective of the Institute of promoting multi- and inter-disciplinary collaborations among academics, professional bodies, and the government.

#### 1.4 Membership

The terms of the following 25 Institute Fellows were renewed during the review period:

Professor C. C. Chan is an Honorary Professor at the Department of Electrical and Electronic Engineering, and President of the Electric Vehicle Association of Asia Pacific. His fields of interest includes electric and hybrid electric vehicles, as well as intelligent transportation systems.

Dr Felix W. H. Chan is an Associate Professor at the Faculty of Law. His fields of interest includes shipping and logistics law, international commercial law, and use of statistical data in legal proceedings.

Professor K. T. Chau is a Professor and Head at the Department of Electrical and Electronic Engineering. His fields of interests include electric and hybrid vehicles, vehicle-to-Grid technology, and vehicular energy systems.

Professor Reynold C. K. Cheng is Professor at the Department of Computer Science. His fields of interests include database and data mining, uncertain data management, big transportation data, graph databases, social network, and crowdsourcing.

Mr Alain J. F Chiaradia is an Associate Professor at the Department of Urban Planning and Design. His field of interest is urban morphometrics.

Dr Timothy Doe-kwong Hau is an Associate Professor at the School of Economics and Finance. His fields of interest includes transportation economics, project evaluation, applied discrete choice econometrics, and public economics.

Dr Hung Chak Derrick Ho is a Research Assistant Professor at the Department of Urban Planning and Design. His fields of interest includes built environment and health, urban resilience, disabled-friendly environment and walkability.

Professor George Q Huang is a Professor and Head of Department of Industrial and Manufacturing Systems Engineering. His fields of interest includes supply chain and logistics engineering, cyber-physical systems, smart logistics, and smart manufacturing.

Dr Mingxin Huang is an Associate Professor at the Department of Mechanical Engineering. His field of interest is lightweight materials for automotive applications.

Dr Yong-hong Kuo is an Assistant Professor at the Department of Industrial and Manufacturing Systems Engineering. His fields of interest includes logistics management and big data in transportation.

Professor P. C. Lai is a Professor at the Department of Geography. Her fields of interest includes geographic information systems design and applications, transport geography and network analysis, digital mapping and cartographic visualization, as well as urban and network Geodata modelling.

Dr Wong-hing Lam is an Assistant Professor at the Department of Electrical and Electronic Engineering. His fields of interest includes mobile radio communications, and intelligent transport services/systems.

Professor Ka Li Frankie Leung is a Clinical Professor at the Department of Orthopaedics and Traumatology. He is also the Chief of Service of Orthopaedics and Traumatology at the Hong Kong University Shenzhen Hospital (HKUSZH) and Chief of Division of Orthopaedic Trauma at Queen Mary Hospital in Hong Kong. His fields of interest includes fracture treatment, fracture prevention, and implant design.

Professor Dennis Y. C. Leung is a Professor at the Department of Mechanical Engineering. His fields of interest includes vehicular emission control, air pollution control, dispersion modelling, and energy conversion.

Dr Weifeng Li is an Associate Professor at the Department of Urban Planning and Design. His fields of interest includes environmental sustainability, land use and transportation planning interactions and the environmental energy effects, GIS and spatial analysis in urban planning.

Dr Xingjian Liu is an Assistant Professor at the Department of Urban Planning and Design. His fields of interest includes regional planning and development in China, including the role of intercity transport networks in regional economies; and use of new (big) data and models in urban planning.

Professor Becky Pui-ying Loo is a Professor at the Department of Geography, and Director of ITS. Her fields of interest includes transportation (infrastructure, road safety, sustainable urban transport, and travel behaviour), spatial analysis (surveys, applied GIS and data modelling), and economic geography (globalization and information society).

Dr Grantham K. H. Pang is an Associate Professor at the Department of Electrical and Electronic Engineering. His fields of interests include intelligent transportation systems, LEDs for signalling and communication intelligent control, and fuzzy system and neural net.

Dr Guibo Sun is an Assistant Professor at the Department of Urban Planning and Design. His fields of interest includes transport infrastructure development (urban rail transit, high-speed railway), active travel and economic impact, as well as spatial data infrastructure development (e.g., 3D pedestrian networks and a walkable Hong Kong).

Professor W. Y. Szeto is a Professor at the Department of Civil Engineering, and Deputy Director of ITS. His fields of interest includes transport network design, transport network reliability, public transport, dynamic traffic assignment, landuse-transport-environment, transport logistics, game theoretical transport problems, and meta-heuristics for transport and logistics.

Dr James Jixian Wang is an Honorary Associate Professor at the Department of Geography. His fields of interest includes port-city relationship, transportation geography, travel behaviour modelling, time budget/use studies, urban public transport in Hong Kong and China, and container port systems.

Professor S. C. Wong is the Francis S Y Bong Professor in Engineering, Chair of Transportation Engineering and Head of the Department of Civil Engineering. His fields of interest includes traffic signals, network modelling, continuum modelling, urban taxi services, and road safety.

Professor Anthony G. O. Yeh is the Chair Professor (Urban Planning and Geographic Information Systems) at the Department of Urban Planning and Design, and Founding Director of ITS. His fields of interest includes land use planning, GIS, transport information system, and road signs.

Dr Fangni Zhang is an Assistant Professor at the Department of Industrial and Manufacturing Systems Engineering. His fields of interest includes transport network modelling, transport economics, multimodal transport modelling and optimisation, and automated and shared mobility service management.

Dr Jiangping Zhou is an Associate Professor at the Department of Urban Planning and Design. His fields of interest includes transport policy and planning, sustainable commute among university members, and big data application in transport/ urban studies

The following 6 Institute Fellows of ITS were newly accepted during the review period:

Dr Jintao Ke is an Assistant Professor at the Department of Civil Engineering. His fields of interest includes smart city and urban computing, transportation economics, big data analytics and artificial intelligence for transportation, and smart mobility services.

Dr. Yongsung Lee is an Assistant Professor at the Department of Geography. His fields of interest includes travel behaviour, Information and Communication Technology (ICT), shared mobility services, autonomous vehicles, changing preferences and lifestyle of young adults in society (e.g. Gen Z, Millennials), impacts of disruptive events on travel behaviours, and resilient and sustainable transportation systems.

Dr Jun Ma is an Assistant Professor at the Department of Urban Planning and Design. His fields of interest includes smart city, urban air mobility, urban computing, and transportation and environment.

Dr. Tianren Yang is an Assistant Professor at the Department of Urban Planning and Design. His fields of interest includes urban analytics and modelling, urban spatial structure and travel, and planning support systems for decision-making

Dr. Zhao Zhan is an Assistant Professor at the Department of Urban Planning and Design. His fields of interest includes urban computing and spatiotemporal data mining, human mobility and travel behaviour, and public transport and shared mobility.

Dr Xiaohu Zhang is an Assistant Professor at the Department of Urban Planning and Design. His fields of interest includes shared mobility, simulation of land use and transport interaction, and urban data science.

The term of 8 Honorary Fellow of ITS was renewed during the review period:

Ir. Albert T.N. Cheng is President of Hong Kong Institution of Highways and Transportation. His fields of interest includes highways engineering, transportation planning, and new town development

Ir T F Leung is former Assistant Commissioner for Transport at the Transport Department, HKSAR Government. His fields of interest includes road safety, Intelligent Transport Systems, and traffic management.

Dr Wilson Li is Chief of Service at the Department of Orthopaedics and Traumatology at the Queen Elizabeth Hospital. His fields of interest includes trauma surgery, trauma audit, injury prevention, rehabilitation after injury, post-traumatic stress syndrome, disaster preparedness, public health, sports medicine, road safety, and in-depth analysis for traffic accidents.

Professor C. K. Mak is a University Fellow and Honorary Professor at the Department of Civil Engineering. His fields of interest includes transport policy and planning, planning and administration of railway and transport infrastructure development, as well as sustainable development of the built environment.

Ir W C Mok is former Assistant Director (Air Policy) at the Environmental Protection Department, HKSAR Government. His fields of interest includes vehicular emission control and policy, electric vehicles, hybrid electric vehicles, and air quality.

Ir W L Tang is Deputy Commissioner at the Transport Department, HKSAR Government. His fields of interest includes transport and urban planning, traffic management, smart mobility and walkability, and development of new towns and road infrastructures.

Professor W H Tsang is an Adjunct Professor at the Department of Geography. His fields of interest includes evolution of transport demand and travel behaviour, emphasis on sustainable development and environmental measures, and development of transport technologies and applications.

Dr K. L. Tsui is a Consultant at the Accident and Emergency Department of Pok Oi Hospital. His fields of interest includes traumatology, traffic injury prevention, disaster medicine, drug and drink driving (driving under influence), and bicycle injuries.

No Honorary Fellows of ITS were newly accepted during the review period:

The following 4 Affiliate Fellows of ITS were newly accepted during the review period:

Dr Ka Ho Tsoi is a Postdoctoral Fellow at the Department of Geography. His fields of interest includes transport decarbonisation, electric mobility, low-carbon transport, mobility and infectious diseases, and transport equity.

Dr Yanan Liu is a Postdoctoral Fellow at the Department of Urban Planning and Design. Her fields of interest includes urban planning, travel behaviour, and GIS.

Dr Yi-Jia Wang is a Postdoctoral Fellow at the Department of Industrial and Manufacturing Systems Engineering. His fields of interest includes bike sharing systems, transportation problem of agriculture, and harvesting logistics.

Dr Jixiang Liu is a Research Assistant at the Department of Urban Planning and Design. Her fields of interest includes travel behaviour, socio-economic difference, and machine learning.

The following 14 Student Fellows of ITS were newly accepted during the review period:

Mr Mak Pak Long, Mr Runqiu Hu, Ms Miaoqing Hu, and Mr Jiatong Song from the Department of Civil Engineering

Miss Ting Lian, Mr. Zhixuan Li, and Miss Zhuangyuan Fan from the Department of Geography

Miss Tingting Li, Mr Hanxi Ma, Miss Jiangyue Wu, Mr Mingzhi Zhou, and Mr Guan Huang from the Department of Urban Planning and Design



Mr Yimo Yan and Mr Zhuoye Zhang, from the Department of Industrial and Manufacturing Systems Engineering

The following 1 Institute Fellows of ITS have departed HKU during the review period:

Dr. Calvin Tribby from the Department of Geography.

## **2. Management**

During the review period, three management committee meetings were held on 2 March, 2021, 27 July 2022, and 13 March 2023.

## **3. Fund Raising**

A total donation of HK\$348,000 to support the organisation of DTLS 2021, 2022 and 2023, was received from the following organisations. Note that due to the postponement of the event, the sponsorships of 2020 have been carried forward to 2021.

1. Autotoll Limited
2. DHL Global Forwarding (Hong Kong) Limited
3. Hong Kong Left Hand Drive Motors Association Limited
4. Hong Kong Tramways Limited
5. MTR Corporation Limited
6. MVA Hong Kong Limited
7. New World First Bus Services Limited/Citybus Limited
8. Pacific Air Limited
9. Shun Tak – China Travel Ship Management Ltd.
10. Siemens Mobility Limited
11. TAXIECO New World Limited
12. The Kowloon Motor Bus Company (1933) Limited
13. The “Star” Ferry Company Limited

## **4. Activities**

### **4.1 Distinguished Transport Lecture Series (DTLS)**

The series were first launched in 2009. Each year, we invite internationally renowned, distinguished experts and scholars to Hong Kong to deliver public lectures in the field of transport. The aim is to promote excellence in transport research and development in Hong Kong, as well as stimulate discussion and the exchange of views between international experts and scholars and local researchers and professionals. As a result of the Covid-19 pandemic, the series came to a halt in 2020, and all events were transitioned to an online format for both 2021 and 2022 to ensure the safety and convenience of participants. The themes of DTLS 2021, 2022, and 2023 were respectively "COVID-19 and Transportation", "The Transport Decarbonisation", and "Autonomous Vehicles". During

the review period, the following Distinguished Transport Lectures were held successfully:

- Distinguished Transport Lecture, “Aspirations, Buses, Covid: a strategy for the future”, by Professor Nick Tyler, University College London, U.K.; 12 April 2021.
- Distinguished Transport Lecture, “Public Transit Before, During, and Following the Pandemic: A View from California”, by Professor Brian D. Taylor, University of California, Los Angeles, U.S.A.; 28 September 2021.
- Distinguished Transport Lecture, “Walkable for Whom: Health, Social Justice, and Equity Impacts of the Built and Natural Environment”, by Professor Lawrence D. Frank, University of California, San Diego, U.S.A.; 18 November, 2021.
- Distinguished Transport Lecture, "Viable Electric Vehicle Charging Facility Planning Models for Asian Cities with High Population Density", by Professor Qiang Meng, National University of Singapore, Singapore; 29 March 2022.
- Distinguished Transport Lecture, "Steering, Automated, Share, Electric Vehicles to a Better Future", by Professor Daniel Sperling, University of California, Davis, U.S.A.; 27 September 2022.
- Distinguished Transport Lecture, "Heat-Tolerant Batteries for Electric Vehicles ", by Professor Chao Yang Wang, Pennsylvania State University, U.S.A.; 9 December 2022.

#### 4.2 Seminars and Others

The following activities were organised during the review period:

- Seminar, “365 days of COVID19 (tracking) in Switzerland – What comes next?”, by Professor Kay W. Axhausen, Eidgenössische Technische Hochschule (ETH) Zürich, Switzerland; 10 March 2021.
- Seminar, "How can we shape the future of mobility in Hong Kong? A people perspective", by Mr Jens-Peter Brauner, Siemens Mobility Hong Kong, Hong Kong; 22 March 2021.
- Seminar, "Fast Charging Batteries for Mass-Market Electric Vehicles", by Professor Chao-Yang Wang, The Pennsylvania State University, U.S.A.; 31 March 2021.
- Seminar, "Transportation Responses to the COVID-19: a dialogue between the East and the West", by Professor Patricia Mokhtarian, Georgia Institute of Technology, U.S.A.; 26 May 2021.
- Seminar, "Placemaking Sandbox for Transport Practitioners", by Dr Iderlina Mateo-Babiano, University of Melbourne, Australia; 6 December 2021.

- Symposium (w/ Department of Geography and Planning of Liverpool University, School of Geography and Environment of Jiangxi Normal University, and Computational Urban Science (Springer)), "International Symposium on High-speed Railway and Regional Development 高铁与区域发展国际研讨会", Hong Kong; 10 May 2022.
- Symposium (w/ ETH Zürich and JLFC), "HK-Swiss Symposium on Future Cities", Hong Kong; 16-17 May 2022.
- Seminar (w/ CUSUP), "A Method to Match Users Across Transportation Modes Based on Repeated Transfer Behaviors", by Dr Hongtai Yang, Associate Professor, Southwest Jiaotong University; 8 June 2022.
- Seminar (w/ Department of Civil Engineering), "Ride-Sourcing Systems & Multiple-Objective Online Ride Matching", by Dr Hai Wang, Singapore Management University, Singapore; 28 June 2022.
- Seminar (w/ Department of Geography), "Cyclists as Intelligent Carriers of Space-time Environmental Information: Crowd-sourced Sensor Data for Local Air Quality Measurement and Mobility Analysis in the Netherlands", by Professor Peter Nijkamp (VU University, The Netherlands) & Dr. Karima Kourtit (Open University, Heerlen, The Netherlands); 21 April 2023.
- Seminar (w/ Department of Computer Science), "Digitalization in the Service of Society: Harnessing Big Vehicle Trajectory Data", by Professor Christian S. Jensen, Aalborg University, Denmark; 3 May 2023.

## 5. Future Plans

### 5.1 Other Planned Activities

- Distinguished Transport Lecture, "Title to be confirmed", by Professor Kara Kockelman, The University of Texas at Austin, U.S.A.; September 2023.
- Distinguished Transport Lecture, "Title to be confirmed", by Professor Hani Mahmassani, Northwestern University, U.S.A.; October 2023.
- Conference (w / Department of Civil Engineering), "INSTR2023: The 9th International Symposium on Transport Network Resilience"; 13-14 December 2023.

Prepared by:

A handwritten signature in blue ink, appearing to read 'Becky P.Y. Loo', with a long horizontal flourish extending to the right.

Professor Becky P.Y. Loo  
Director,  
Institute of Transport Studies

June 2023