RGC Ref. No.:
UGC/IIDS24/B02/21
_____
(please insert ref. above)

RESEARCH GRANTS COUNCIL
COMPETITIVE RESEARCH FUNDING SCHEMES FOR
THE LOCAL SELF-FINANCING DEGREE SECTOR

INTER-INSTITUTIONAL DEVELOPMENT SCHEME (IIDS)

<u>Completion Report</u>
(for completed projects only)

<u>Submission Deadlines</u>: 1. *The unspent balance, if applicable, and auditor's report: within* **<u>six</u>** *months of the approved project completion date.*
2. *Completion report: within **<u>12</u>** months of the approved project completion date.*

Part A: The Project and Investigator(s)

1. **Project Title**

    Research Directions and Applications of Artificial Intelligence (AI) in Smart Tourism in the

    Guangdong-Hong Kong-Macau Greater Bay Area (GBA)

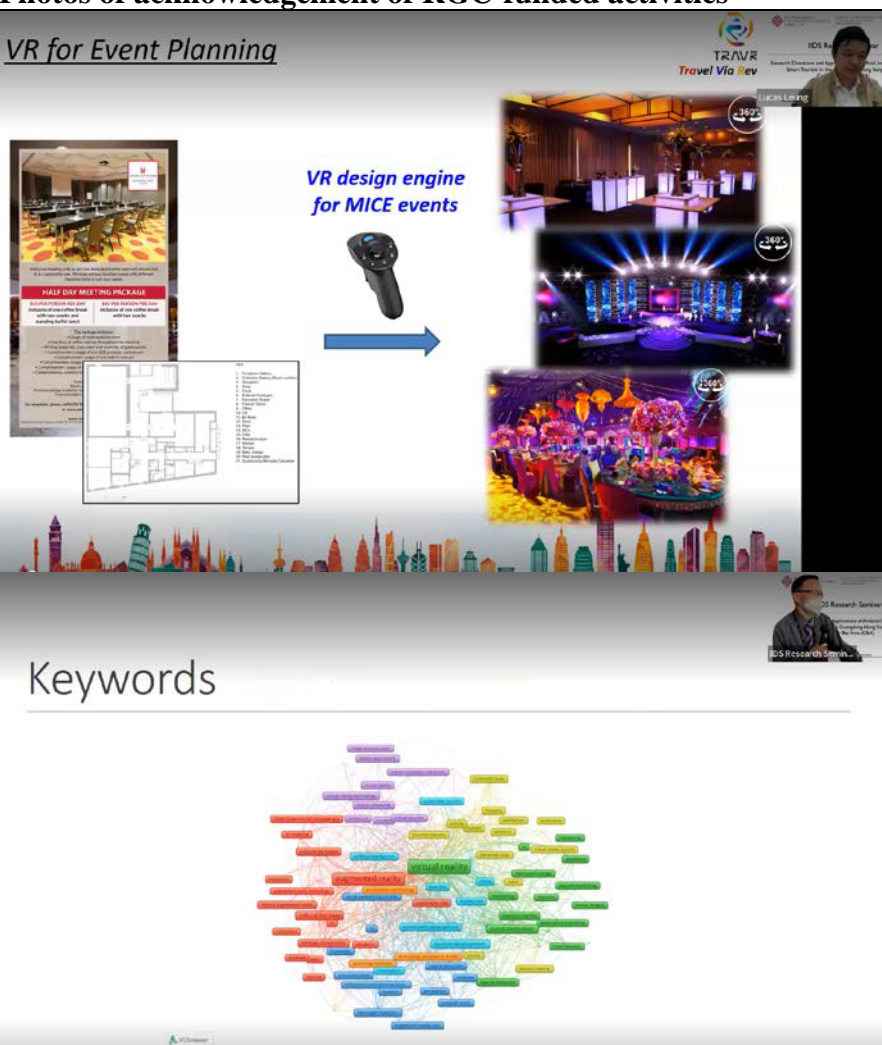2. **Investigator(s) and Academic Department(s) / Unit(s) Involved**

Research Team	Name / Post	Unit / Department / Institution
Principal Investigator	Dr NG Mei-lan / Principal Lecturer	Division of Business and Hospitality Management / School of Professional Education and Executive Development, The Hong Kong Polytechnic University (PolyU SPEED)
Co-Principal Investigator(s)	Dr LEUNG Ka-shing / Lecturer	Division of Science, Engineering and Health Studies / PolyU SPEED
	Dr WONG Phoebe Wai-sum / Senior Lecturer	Division of Business and Hospitality Management / PolyU SPEED
Co-Investigator(s)	Dr TAVITIYAMAN Pimtong / Associate Division Head and Principal Lecturer	Division of Business and Hospitality Management / PolyU SPEED

Research Team	Name / Post	Unit / Department / Institution
	Prof REN Lianping / Professor	Macao Institute for Tourism Studies
	Dr LEUNG Cheng-han / Assistant Professor	Faculty of Business / City University of Macau
	Dr SHI Si / Associate Professor	School of Business Administration / Southwestern University of Finance and Economics
	Dr LO Man-fung / Senior Lecturer and Director for Technology and Infrastructure Development	Faculty of Education/ The University of Hong Kong
	Dr CHAN Jason Kai-yue / Associate Dean (Development) and Head of IT	Information Technology Unit / College of Professional Education and Executive Development

3. **Project Duration**

	Original	Revised	Date of RGC / Institution Approval *(must be quoted)*
Project Start Date	01/01/2022	N/A	N/A
Project Completion Date	31/12/2022	N/A	N/A
Duration *(in month)*	12 months	N/A	N/A
Deadline for Submission of Completion Report	31/12/2023	N/A	N/A

4.4   Please attach photo(s) of acknowledgement of RGC-funded activities.

Activities	Date	Photos of acknowledgement of RGC-funded activities
Seminar 1: VR Tourism in Future	21 March 2022 (Mode: online)	

Seminar 2: How is AI Evolving the Tourism Industry	27 April 2022 (Mode: online)	
Seminar 3: How Smart Technologies Transform the Way We Travel	14 June 2022 (Mode: online)	
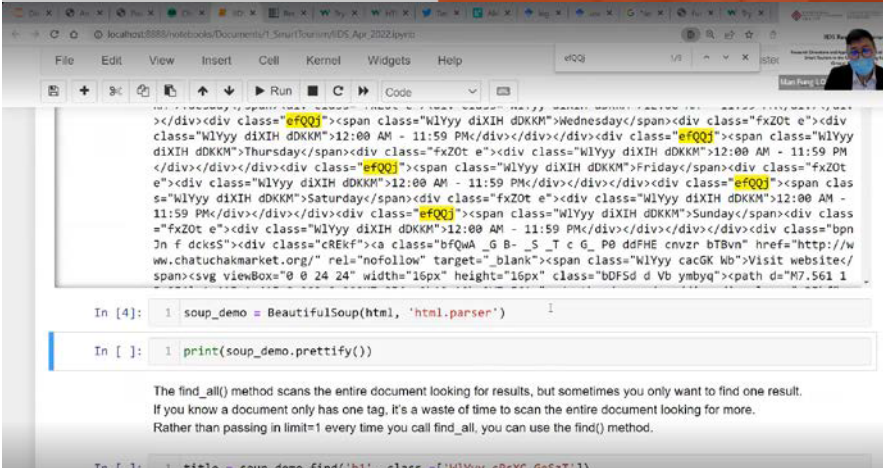
| Conference: Smart Tourism in the Greater Bay Area | 23 August 2022 (Mode: Hybrid) | |

Part B: The Final Report

5.   Collaboration with Other Self-Financing Degree-Awarding Institutions

	Name of Institution(s)	% of Participation	Distinctive Element(s) of the Institution in Responsible Project
Applying Institution	School of Professional Education and Executive Development, The Hong Kong Polytechnic University (PolyU SPEED)	100%	Take all responsibility to manage, organise, and promote the project, seminars, and conference.
Collaborating Institution(s) (If any) [#]	N/A		
	N/A		
	N/A		
Total:		**100%**	

[#] *If no other eligible local self-financing degree-awarding institutions are involved, please input "N/A" in this table.*

6.   Project Objectives

6.1   Objectives as per original application

1.   To develop a research platform for knowledge transfer and sharing in the areas of AI and its application in Smart Tourism from key stakeholders' perspective;

2.   To understand the latest development of AI evolving in Smart Tourism in the Guangdong-Hong Kong-Macau Great Bay area;

3.   To identify the opportunities and challenges led by the applications of AI in Smart Tourism in the Guangdong-Hong Kong-Macau Great Bay area;

4.   To foster future research collaboration with local and international scholars;

5.   To gain invaluable advice and feedback by sharing their works with invited speakers in seminars;

6.   To acquire knowledge of application of AI in Smart Tourism to share with students in lectures enhancing their learning experience

7.   To publish papers, book chapters, and case studies in supporting journals through research collaboration

6.2   Revised objectives: N/A

Date of approval from the RGC: N/A

Reasons for the change:	N/A

6.3 Realisation of the objectives
(Maximum 1 page; please state how and to what extent the project objectives have been achieved; give reasons for under-achievements and outline attempts to overcome problems, if any)

Objective 1: To develop a research platform for knowledge transfer and sharing in the areas of AI and its application in Smart Tourism from key stakeholders' perspective;

Objective 1 was fully (100%) achieved by the successful organisation of 3 seminars centered on the domain of Articfical Intelligence (AI) and its application in Smart Tourism. The inaugural seminar was hosted by Mr Lucas Leung titled as "Technology Crossover: VR x AI", focusing on in-depth exploration of Virtual Reality (VR) technologies to elevate the travel experience through data analysis, including showcasing travel products in VR, potential collaboration with external stakeholders, and design new travel products and packages. The first seminar hosted by Dr Edmund Wut delved into the topic of "Virtual Reality and Augmented Reality in Tourism: A Review and Researched Agenda". Noteworthy was the design of the search strategy for tourism-oriented content. Dr Wut has explained the advancement in bibliometric visualisation on VR tourism research and informed us about how to capture better clusters on existing research areas using keywords co-occurrence.

Objective 2: To understand the latest development of AI evolving in Smart Tourism in the Guangdong-Hong Kong-Macau Great Bay area

Objective 2 was fully (100%) achieved by the successful organisation of 3 seminars relating to AI and its evolution in Smart Tourism in the GBA. The second seminar led by Mr Able Zhao bore the title "The Smart Way of Travel", informed us to redefine the travel market and seek for new avenues. The seminar underlined that AI is now boosting the data-driven solutions and services within the domain of the tourism industry. Mr Zhao also elaborated on the introduction of Rich Communications Services (RCS) heralded as the successor capable of delivering rich functionality natively and universally within the travelling. In addition, Mr Kevin Shui's contribution was marked by an elucidation of the emerging trends of smart tourism in the GBA through Tourism 4.0 in the third seminar. Mr Shui demonstrated the latest developments of AI, which is one of the channels to unlock innovation and sufficiently enable collaboration among all stakeholders of the tourism ecosystem.

Objective 3: To identify the opportunities and challenges led by the applications of AI in Smart Tourism in the Guangdong-Hong Kong-Macau Great Bay area.

Objective 3 was fully (100%) achieved by the successful organisation of the "Conference on Smart Tourism in the Greater Bay Area". This conference garnered 13 presentations from a spectrum of stakeholders, including six Universities (The Hong Kong Polytechnic University, Hong Kong Baptist University, The University of Auckland, Durham University, The University of Manchester, and UCSI University) alongside three industry companies and one institute (Hong Kong Cruise and Yacht Industry Association, FreeD Group Limited, TraVR HK Limited, and Macao Institute for Tourism Studies). The conference served as an essential platform assembling colleagues, academics, researchers, and industry practitioners from diverse disciplines to engage in a vibrant exchange of experiences and insights focusing on the AI development on smart tourism. The conference also provided a unique opportunity for participants to share their knowledge in AI among local communities and add values to the higher education and tourism sectors.

Objective 4: To foster future research collaboration with local and international scholars

Objective 4 was fully (100%) achieved. The aforementioned conference drew attendance from a diverse audience of over 100 participants, comprising both local and international scholars. The scholars contributed their perspectives and insights concering smart tourism within the Greater Bay Area. The conference served as a pivotal platform facilitating all scholars to familiarise themselves with AI technology in tourism and innovative businesses, to foster the research collaborations in the GBA and to foster the global discourse on smart tourism research. The event's highlights were the Keynote Speakers Prof. Dimitrios Buhalis, his address titled "The Future of Smart Tourism" and Prof. Hiram Ting shared the opportunities for encompassing research publications in tourism management.

Objective 5. To gain invaluable advice and feedback by sharing their works with invited speakers in seminars;

Respondents were invited to share their advice and feedback during and following the seminars / conference.

For Seminar 1: VR Tourism in Future, a total of 11 respondents, regarding the feedback on the presentation, 91% of participants expressed satisfaction with the allocation of seminar time. Moreover, for the feedback on the organisation, 90.9% of participants indicated that they are interested in attending future conferences, workshops, or seminars organised by the PolyU, SPEED (Appendix E). Finally, the participants also suggested some topics for possible future conferences or seminars, including (1) IoT, (2) post-pandemic and work-life balance, (3) contemporary workforce dynamic, (4) Metaverse gaming industry, (5) Tourism Experience for the next generation, and (6) AI education.

For Seminar 2: How is AI Evolving the Tourism Industry. There were 19 respondents to provide seminar feedback. Regarding the feedback on the presentation, 79% of participants expressed satisfaction with the allocation of seminar time. Moreover, for the feedback on the orgnaisation, 94.7% of participants indicated that they are interested in attending future conferences, workshops, or seminars organised by the PolyU, SPEED (Appendix F). Finally, the participants also suggested some topics for possible future conferences or seminars, including (1) AI, (2) Deep learning, (3) Technology in metaverse concept, (4) Data analysis, (5) Python step by step guide, (6) Emerging AI Applications, and (7) Telehealth.

For Seminar 3: How Smart Technologies Transform the Way We Travel. There were 13 respondents to provide seminar feedback. Regarding the feedback on the presentation, 76.9% of participants think the presentation material (e.g. PowerPoint) is excellently presented; 84.6% of participants agreed the format of the seminar in sharing the latest research and development of the topic as presented are excellently delivered; Moreover, for the feedback on the organisation, 100% of participants indicated that they are interested in attending future conferences, workshops, or seminars organised by the PolyU, SPEED (Appendix G). Finally, the participants also suggested some topics for possible future conferences or seminars, including (1) Machine Learning (2) Destination competitiveness in the post covid-19 era, (3) Tourism future under the pandemic situation, (4) Hospitality, and (5) Green finance.

For the conference, there were 30 respondents providing seminar feedback. Regarding the feedback on the presentation, 60% of the participants think the speakers of the seminar is excellently presented. Moreover, for the feedback on the organisation, 93.3% of participants indicated that they are interested in attending future conferences, workshops, or seminars organised by the PolyU, SPEED (Appendix H). Finally, the participants also suggested some topics for possible future conferences

or seminars, including (1) Tourism demand forecasting in the post covid-19 world (2) Data analysis skills, (3) Intercontinental tourism, (4) Philosophy or religious studies, (5) Human Resources management, leadership or organisational behaviour, (6) Heritage tourism and (7) Robotic and AI applications in hotel, catering, travel, event, cruise and theme park.

Objective 6. To acquire knowledge of application of AI in Smart Tourism to share with students in lectures enhancing their learning experience

The knowledge of the application of AI (such as VR, AR) in Smart Tourism has been shared with PolyU SPEED students in the following subjects to enhance their learning experience:

- BHM4645 Hospitality and Tourism Technology and Innovation
- BHMS4687 Marketing and Organizing Events
- BHMS4381 Destination Management
- SEHS2337 Digital Tools and Skills for Academic Workplace Productivity

Objective 7: To publish papers, book chapters, and case studies in supporting journals through research collaboration

The PI (Dr NG Mei-lan) collaborated with other overseas and local scholars and submitted a paper to the Journal of Travel Research as follows:
Wan, C., **Ng, M. L**., Cheung, T. Y. Cherry., Lit, K. K., & Lau, M. M. (Submitted). The more is always better? VR CAVE vs. desktop VR for shaping tourists' attitudes and sustainable travel intentions. *Journal of Travel Research.*

Summary of objectives addressed to date

Objectives	Addressed *(please tick)*	Percentage Achieved *(please estimate)*
1. To develop a research platform for knowledge transfer and sharing in the areas of AI and its application in Smart Tourism from key stakeholders' perspective	✓	100%
2. To understand the latest development of AI evolving in Smart Tourism in the Guangdong-Hong Kong-Macau Great Bay area	✓	100%
3. To identify the opportunities and challenges led by the applications of AI in Smart Tourism in the Guangdong-Hong Kong-Macau Great Bay area	✓	100%
4. To foster future research collaboration with local and international scholars	✓	100%
5. To gain invaluable advice and feedback by sharing their works with invited speakers in seminars	✓	100%
6. To acquire knowledge of application of AI in Smart Tourism to share with students in lectures enhancing their learning experience	✓	100%
7. To publish papers, book chapters, and case studies in supporting journals through research collaboration	✓	100%

6.1   Project progress

Original Implementation Schedule	Revised Implementation Schedule (Date of RGC's Approval)	Updated Progress
Inviting and confirming speakers to finalise the rundown of the conference and seminars	N/A	Completed
Setting up a webpage to disseminate information of the conference and seminars, and to serve as a registration platform	N/A	Completed
Disseminating promotional materials of the conference and seminars via various promotional tools (e.g. direct marketing, digital marketing and PR)	N/A	Completed
Hosting and organising 1 conference	N/A	Completed
Hosting and organising Seminar 1	N/A	Completed
Hosting and organising Seminar 2	N/A	Completed
Hosting and organising Seminar 3	N/A	Completed
Evaluating the impact of this project	N/A	Completed
Publishing paper, book chapters, and case studies	N/A	Completed

Title / Name (Surname in Capital Letters)	Post / Institution	Title / Topic of Presentation / Course	Previous Research Links with Hong Kong Institutions (Nature and Date (Month / Year))
Mr Lucas LEUNG	Founder / TraVR HK Limited	Seminar 1: Technology Crossover: VR x AI; Conference: VR & Metaverse Tourism Driving to the New Marketing Strategies	Hong Kong Community College, The Hong Kong Polytechnic University (Delivered a speech on 6 October 2021, *"VR Tourism: Shaping the Future of the Travel and Tourism Industry in the Industrial 4.0 Era"*)
Dr Edmund WUT	Senior Lecturer / Division of Business and Hospitality Management, CPCE	Seminar 1: Virtual Reality and Augmented Reality in Tourism: A Review and Research Agenda	Currently employed at PolyU SPEED
Mr Abel ZHAO	Co-founder and CEO / FreeD Group Limited	Seminar 2: The Smart Way of Travel; Conference: The Smart Way of Travel	N/A
Dr Man-fung LO	Dr LO Man-fung / Senior Lecturer and Director for Technology and Infrastructure Development	Seminar 3: An Introduction to Python for Smart Tourism Research	Currently employed at The University of Hong Kong
Mr Kevin SHUI	Founder and Chief Producer / Good Cause Digital	Seminar 3: How Applications of Smart Tourism Enhance the Destination Experiences	AIM – Hong Kong Association of Interactive Marketing (*HK Digital Advertising Start-ups X Publishing (Writers) Promotion Support Scheme*)
Dr Wilson LEUNG	Lecturer / Division of Science, Engineering and Health Studies, CPCE	Seminar 3: The Role of Virtual Reality Interactivity in Building Tourists' Memorable Experiences and Post-adoption Intentions in the COVID-19 Era	Currently employed at PolyU SPEED
Prof. Dimitrios BUHALIS	Professor / School of Hotel and Tourism Management,	Conference: The Future of Smart Tourism, Research Clinic: Tourism Review	Currently employed at The Hong Kong Polytechnic University

Title / Name (Surname in Capital Letters)	Post / Institution	Title / Topic of Presentation / Course	Previous Research Links with Hong Kong Institutions (Nature and Date (Month / Year))
	The Hong Kong Polytechnic University		
Ms Kara YEUNG	Executive Director / Hong Kong Cruise & Yacht Industry Association	Conference: Marine Recreation & Eco-tourism	N/A
Dr Ludwig CHANG	Assistant Professor and Associate Head / Department of Finance and Decision Science; Associate Director / BBA, Hong Kong Baptist University	Conference: VR Tourism Experiences and Tourist Behavior Intention in COVID-19: An Experience Economy and Mood Management Perspective	Co-authored papers with scholars in The Chinese University of Hong Kong and Hong Kong Baptist University: • Chang, M. K., Cheung, W., & Tang, M. (2013). Building trust online: Interactions among trust building mechanisms. *Information & management, 50*(7), 439-445. Co-authored papers with scholars in Hong Kong Baptist University: • Chang, M. K., & Law, S. P. M. (2008). Factor structure for Young's Internet Addiction Test: A confirmatory study. *Computers in human behavior, 24*(6), 2597-2619.
Dr Jason CHAN, MH, JP	Associate Dean (Development) and Head of Information Technology / College of Professional and	Conference: Innovation and Technology: Building the Future of Smart Tourism	Co-authored papers with scholars in Hong Kong metropolitan University: • Shin, N., & Chan, J. K. (2004). Direct and indirect effects of online learning on distance education. British Journal of

Title / Name (Surname in Capital Letters)	Post / Institution	Title / Topic of Presentation / Course	Previous Research Links with Hong Kong Institutions (Nature and Date (Month / Year))
	Continuing Education, The Hong Kong Polytechnic University		*Educational Technology,* *35*(3), 275-288.
Dr Randy WONG	Lecturer / Information Systems and Operation Management, Faculty of Business and Economics, The University of Auckland	Conference: Immersive Technologies and Tourism	Co-authored papers with scholars in Hong Kong Baptist University: • Cheung, C. M., Wong, R. Y. M., & Chan, T. K. (2020). Online disinhibition: conceptualisation, measurement, and implications for online deviant behavior. *Industrial Management & Data Systems.* • Wong, R. Y., Cheung, C. M., & Xiao, B. (2018). Does gender matter in cyberbullying perpetration? An empirical investigation. *Computers in Human Behavior*, *79*, 47-257.
Dr Zach LEE	Associate Professor / Department of Management & Marketing, Durham University	Conference: Live Streaming and Tourism	Co-authored papers with scholars in Hong Kong Baptist University: • Chan, T. K., Cheung, C. M., Benbasat, I., Xiao, B., & Lee, Z. W. (2022). Bystanders Join In Cyberbullying on Social Networking Sites: The Deindividuation and Moral Disengagement Perspectives. *Information Systems Research.*

Title / Name (Surname in Capital Letters)	Post / Institution	Title / Topic of Presentation / Course	Previous Research Links with Hong Kong Institutions (Nature and Date (Month / Year))
			• Cheung, C. M., Thadani, D. R., & Lee, Z. W. (2021). An Integrative Framework of Cognitive Absorption for Technology Use. In *Information Technology in Organisations and Societies: Multidisciplinary Perspectives from AI to Technostress* (pp. 111-145). Emerald Publishing Limited.
Dr Tommy CHAN	Associate Professor / Division of Management Science and Marketing Alliance Manchester Business School, The University of Manchester	Conference: AI Applications (Service Chatbots) in Tourism	Co-authored papers with scholars in Hong Kong Baptist University: • Cheung, C. M., Wong, R. Y. M., & Chan, T. K. (2020). Online disinhibition: conceptualisation, measurement, and implications for online deviant behavior. *Industrial Management & Data Systems.*
Prof. Hiram TING	Associate Professor / Department of Tourism and Commerce, UCSI University	Conference: Research Clinic: Journal of Responsible Tourism Management/ Asian Journal of Business Research/ Young Consumer; Special Issue: Tourism and Hospitality Research	Co-authored papers with the Hang Seng University of Hong Kong: • Cheung, M. L., Ting, H., Cheah, J. H., & Sharipudin, M. N. S. (2020). Examining the role of social media-based destination brand community in evoking tourists' emotions and intention to co-create and visit. *Journal of Product & Brand Management.* • Cheung, M.L.,

Title / Name (Surname in Capital Letters)	Post / Institution	Title / Topic of Presentation / Course	Previous Research Links with Hong Kong Institutions (Nature and Date (Month / Year))
			Guilherme, P., Philip, J.R., Leung, W.K.S. & Hiram. T. (ahead-of-print, 2020). Investigating the role of social media marketing on value co-creation and engagement: An empirical study in China and Hong Kong. *Australasian Marketing Journal.*

6.3 Please provide details of the activities organised, including the theme / objectives of the activities, targeted participants, attendance, analysis of participants, e.g. country of origin, research background, etc., evaluation forms of the activities and a summary of the participants' evaluation. Photos of the activities are preferred.)

<div align="center"><u>**Analysis of Participants**</u></div>

This IIDS project has successfully garnered 4 leading scholars and industry representatives in the field of smart tourism to deliver three research seminars and one conference about the sustainable future of tourism between March and August 2022. The one-day conference entitled "Conference on Smart Tourism in the Greater Bay Area" was organised on 23 August 2022 in Silverbox Ballroom, Hotel ICON, Tsim Sha Tsui East, Kowloon. All research seminars and the one-day conference are being opened to all self-financing institutions and to the public. The official website (https://www.speed-polyu.edu.hk/research/funded-research-projects/IIDS24-B02-21) has been set up to promote all the research activities and project information. Meanwhile, the conference website (https://smarttourism2022.speed-polyu.edu.hk/) was also established to provide public access to the salient highlights of the conference. The series of research seminars and the one-day conference attracted The below table summarised the number of participants in the research seminars and conference:

Nature of Presentation	PolyU SPEED Participants	External/ other participants	Total
VR Tourism in Future	20	CIHE (1), HSUHK (1), HKBUCIE (1), HKCT (1), IFTM (3), PolyU CPCE (4). CUHK (1), EdUHK (1), TWC (3). UOWCHK (1), VTC (1)	38
How is AI Evolving the Tourism Industry	16	CIHE (1), CityU Macau (1), HSUHK (2). HKIT (1), NYC (2), IFTM (4), PolyU SHTM (2), PolyU CPCE (4), HKUSPACE (4), TraVR (1), TWC (3). UOWCHK (1)	42
How Smart Technologies Transform the Way We Travel	15	CityU HK (1). CityU Macau (1). HSUHK (4), HKCT (1). HKSYU (2), IFTM (3). SWUFE (1). CUHK (1), USTOCPE (1), HKUSPACE (1), PolyU CPCE (3) TraVR (1), TWC (2), VTC (1)	38
Conference	55	CBCC (1), CIHE (1). CityU Macau (1), CityU HK (1), Good Cause Digital (1), FreeD Group Limited (1), HSUHK (5), HKBU (9), HKEAA (1). HKU (1), HKCYIA (1), HKSYU (1), KKday (2), IFTM (3), LSTYKHLSS (1), PolyU CPCE (28), PolyU (1), SWUFE (1), THEi (2), TKOGSS (1), UM (1), TraVR (2), UTS (1), UOWCHK (5), VTC (10), HKUSPACE (2), others (3)	143
		Total	**261**

**<u>Seminar 1 (21 March 2022): VR Tourism in Future</u>**

Virtual Reality (VR) Tourism aims to establish a brand-new Smart Travel Habitat by leveraging VR, Augmented Reality (AR) and Mixed Reality (MR) technologies.   VR Tourism is trying to create a centralised VR tourism hub and connect potential travellers with industry stakeholders, such as Airlines, Hotels, Theme Parks, and other Tourism partners.   The seminar afforded colleagues and other participants the opportunity to grasp the intricacies of these emerging methdologies and their application within tourism.

The seminar was held from 2:00 p.m. to 5:00 p.m. and convened within N1011, West Kowloon Campus, PolyU (Appendix A).   During the seminar, Mr Lucas LEUNG explored how the usage of Data Modelling would enhance the travel industry to evaluate customer intention on travel issues, including geographic analysis, demographic analysis, product correlation, loyalty, purchase behaviour, repeat customers, etc.   Mr LEUNG also advocated that Artificial Intelligence Applications in Tourism include various perspectives, including Chatbots, Intelligent Personal Assistants, Sentiment Analysis, Digital Ads Optimization, Travel Trends and CRM Management.

The seminar highlighted the significance of VR Tourism.   Immersive Media Channels could embed with the Metaverse through a persistent and immersive simulated world (VR or AR) that would be experienced in the first person by large groups of simultaneous users who share a strong sense of mutual presence.
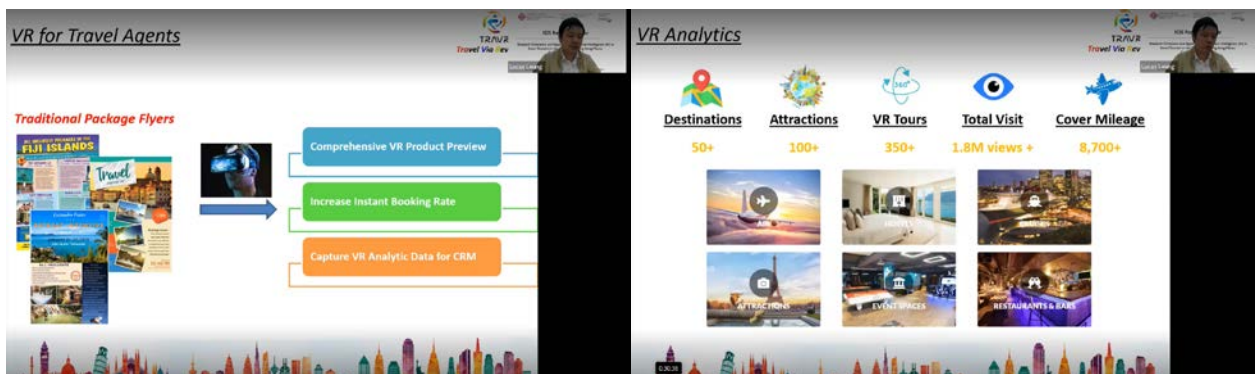
For the second part of the seminar, Dr Edmund WUT delivered a notable discourse centered on significant VR research agendas by applying bibliometric visualisation in VR/AR tourism research, and learning how to use the software VOS viewer.   Dr WUT explored the VR word cloud that would further improve the logic and conceptual model, as well as the literature review on tourism. Moreover, Dr WUT explained the differences between Scopus and Web of Science.   For a better understanding of tourism studies, VOS Viewer allows colleagues to generate connections between two terms, bibliographic coupling links between articles, co-authorship links between authors, and co-occurrence links between keywords.
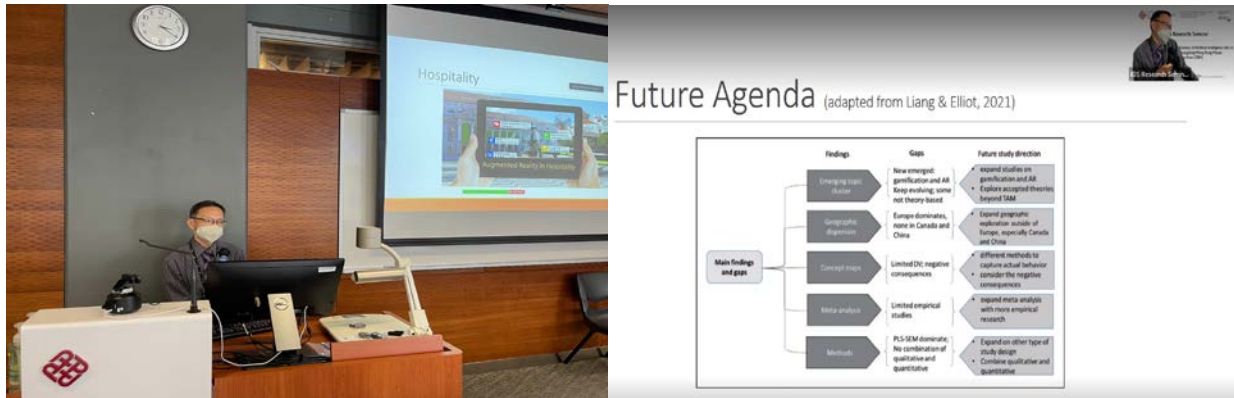
The presentations delivered by both speakers were exceedingly informative, and the enthusiastic engagement demonstrated by the participants highlighted the significance of Virtual Reality (VR) Tourism within our academic community.

Seminar 2 (27 April 2022): How is AI Evolving the Tourism Industry

Artificial intelligence is to shape the future of Smart Merchandising, Smart Commerce and user interactions in cutting-edge digital interfaces by creating unprecedented value for our partners and their customers. The seminar provides chances for colleagues and other participants to learn how to utilise AI and apply it on the marketing and related industries.

The seminar was held from 2:00 a.m. to 5:00 p.m. and convened within N1011, West Kowloon Campus, PolyU (Appendix B). In the seminar, Mr Abel ZHAO explored the importance of Rich Communications Services (RCS). A successor to SMS, the RCS platform, was designed to deliver rich functionality in a native. Through RCS, businesses could bring customised, branded and interactive mobile experiences to their customers through a pre-installed app where users did not need to down an additional application to access such features, such as Branding (Name, logo), Verified Sender (Customer's safety and peace of mind), etc. Mr ZHAO also advocated the importance of data-driven strategies. Marketing support for brands was usually based on the data. Reach or frequency data from external channels, along with customer data points collected, will be utilised to establish the customer's persona for segmenting and targeting strategies.

For the second part of the seminar, Dr Man-fung LO introduced Python for Smart Toursim Research. Through the execution of Python scripts, he presented empirical data that effectively showcased the transformative impact of AI on the tourism industry. Dr LO demonstrated the further directions of research in AI areas including rule-based reasoning, machine learning with deep learning being a further layer, subordinate Machine Learning Techniques (Natural Language Processing, Computer Vision, Speech Analytics, and Robotics).
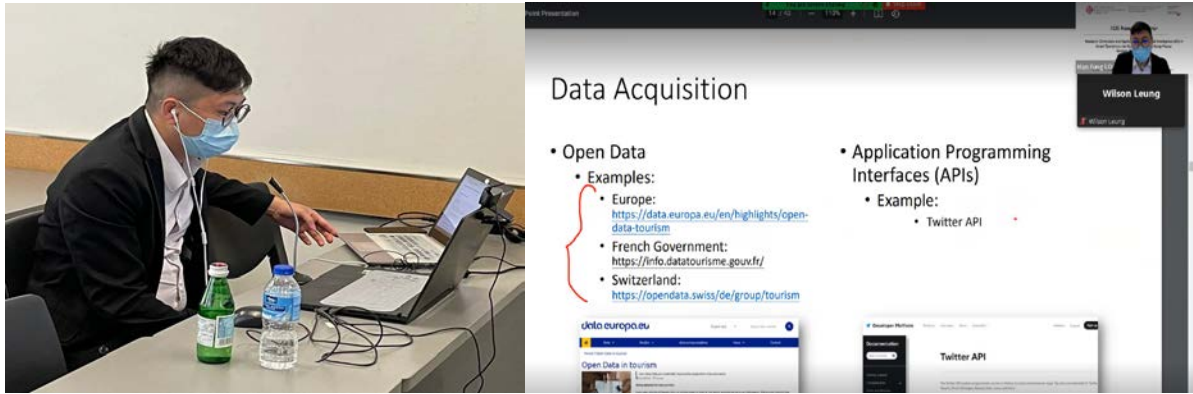
The presentations delivered by both speakers were profoundly informative, and the active participation illustrated the significant role that AI in further research.

### Seminar 3 (14 June 2022): How Smart Technologies Transform the Way We Travel

Tourism 4.0 constituted an endeavor to unleash the untapped potential by enabling collaboration among all stakeholders of the tourism ecosystem to co-create enriched experiences with intelligent applications of key enabling technologies for tourism. The seminar provided chances for colleagues and other participants to learn how to utilise smart technologies and apply them on the way we travel.

The seminar was held from 2:00 a.m. to 5:00 p.m. in N1011, West Kowloon Campus, PolyU (Appendix C). During this enlightening gathering, Mr Kevin SHUI eloquently shared his insights. He emphasized that the next generation of travelers, composed primarily of Millennials and Gen Zers, possesses substantial spending power, surpassing that of their older counterparts with a staggering $350 billion, equating to 1.5 times more in financial capacity. These young adventurers, driven by an insatiable wanderlust, are constantly yearning to explore the world. Mr SHUI highlighted that the integration of smart technologies will greatly enhance the travel experiences of this new generation in a manner that is inherently digital, imbued with authenticity, and offers value beyond mere cost considerations.

For the second part of the seminar, Dr Wilson LEUNG presented pragmatic research methodologies about the role of VR interactivity in building tourists' memorable experiences and post-adoption in the Covid-19 era. Dr LEUNG believes the research should explore different antecedents that predict tourists' memorable experiences. While previous studies have predominantly concentrated on the impact of the four dimensions of the experience economy (education, entertainment,

aesthetics, and escapism) on tourists' experiences, Dr LEUNG pointed out the necessity for empirical exploration of how the technological features inherent in VR technology shape the very essence of tourists' memorable experiences. Therefore, an empirical understanding of how the technological features of VR technology shape tourists' memorable experiences is necessary.
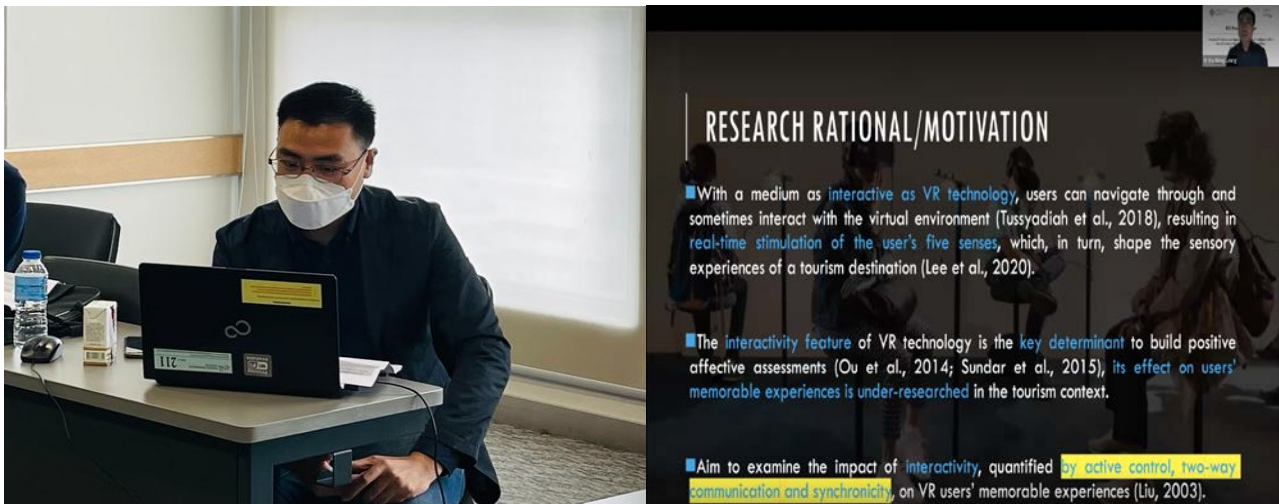
The presentations delivered by both speakers were profoundly informative, and the active participation illustrated the significant role that smart technologies holds for our colleagues.

Conference (23 August 2022): Smart Tourism in the Greater Bay Area

The one-day conference was held on 23 August 2022 from 10:00 a.m. to 5:00 p.m. at Hotel ICON. There are 13 presentations. Scholars come from 6 universities (College of Professional and Continuing Education on behalf PolyU, The Hong Kong Polytechnic University, The University of Auckland, Durham University, The University of Manchester, UCSI University, Macao Institute for Tourism Studies) and two industry professionals contributed to the conference. The conference provides local academics with an advanced understanding of AI in smart tourism, both in theory and in practice. It provides a research platform for both academics and researchers to strengthen their research capabilities in the emerging field of AI and smart tourism. The conference allows industry practitioners to understand opportunities and challenges with experts specialising in AI and smart tourism to gain invaluable insights to improve their practical knowledge. By delivering a series of conferences and seminars in the emerging smart tourism field, this project helps to acquire and strengthen the knowledge of AI in the smart tourism domain among local academics and increase their likelihood of becoming successful researchers in the future. This, in turn, can bring ongoing benefits to the Hong Kong higher education sector. The highlights and photos are attached in Appendix D.

Evaluation of Feedback and Recommendation
Seminar 1: VR Tourism in Future

A total of 62 people registered for the seminar, and 38 people attended the first seminar (i.e. 62 % participation). The seminar targeted all the self-financing institution's teachers and students. In addition, the seminar had been promoted by the Federation of Self-financing Tertiary Education (FSTE). Seminar feedback was received from 11 respondents. Regarding the feedback on the presentation, 36.4% of the participants think the speakers of the seminar excellently presented; 45.5% of participants think the presentation material (e.g. PowerPoint) is excellently presented; 45.5% of participants agreed the format of the seminar in sharing the latest research and development of the topic as presented are excellently delivered; 54.5% of participants rated very satisfactory for the overall quality of the sessions in the seminar; 91% of participants think the seminar time allocation is well-established. Moreover, for the feedback on the organisation, 54.5% of the participants rated "Excellent" for the overall organisation of the seminar (such as location, facilities, support from organisers, etc.); 90.9% of participants indicated that they are interested in attending future conferences, workshops, or seminars organised by the PolyU, SPEED (Appendix E). Finally, the participants also suggested some topics for possible future conferences or seminars, including (1) IoT, (2) post-pandemic and work-life balance, (3) contemporary workforce dynamic, (4) Metaverse gaming industry, (5) Tourism Experience for the next generation, and (6) AI education.

Seminar 2: How is AI Evolving the Tourism Industry

There is a total of 77 people registered for the seminar, and 42 people attended the seminar (i.e. 54 % participation). The seminar targeted all the self-financing institution's teachers and students. In addition, the seminar had been promoted by the Federation of Self-financing Tertiary Education (FSTE). There are 19 respondents of the seminar feedback. For the feedback on the presentation, 47.4% of the participants think the speakers of the seminar excellently presented; 47.4% of participants think the presentation material (e.g. PowerPoint) is excellently presented; 57.9% of participants agreed the format of the seminar in sharing the latest research and development of the topic as presented are excellently delivered; 52.6% of participants rated very satisfactory

for the overall quality of the sessions in the seminar; 79% of participants think the seminar time allocation is well-established. Moreover, for the feedback on the organisation, 52.6% of the participants rated "Excellent" for the overall organisation of the seminar (such as location, facilities, support from organisers, etc.); 94.7% of participants indicated that they are interested in attending future conferences, workshops, or seminars organised by the PolyU, SPEED (Appendix F). Finally, the participants also suggested some topics for possible future conferences or seminars, including (1) AI, (2) Deep learning, (3) Technology in metaverse concept, (4) Data analysis, (5) Python step-by-step guide, (6) Emerging AI Applications, and (7) Telehealth.

Seminar 3: How Smart Technologies Transform the Way We Travel

There is a total of 54 people registered for the seminar, and 38 people attended the seminar (i.e. 70 % participation). The seminar targeted all the self-financing institution's teachers and students. In addition, the seminar had been promoted by the Federation of Self-financing Tertiary Education (FSTE). There are 13 respondents of the seminar feedback. For the feedback on the presentation, 61.5% of the participants think the speakers of the seminar excellently presented; 76.9% of participants think the presentation material (e.g. PowerPoint) is excellently presented; 84.6% of participants agreed the format of the seminar in sharing the latest research and development of the topic as presented are excellently delivered; 76.9% of participants rated excellent for the overall quality of the sessions in the seminar; 61.5% of participants think the seminar time allocation is well-established. Moreover, for the feedback on the organisation, 61.5% of the participants rated "Excellent" for the overall organisation of the seminar (such as location, facilities, support from organisers, etc.); 100% of participants indicated that they are interested in attending future conferences, workshops, or seminars organised by the PolyU, SPEED (Appendix G). Finally, the participants also suggested some topics for possible future conferences or seminars, including (1) Machine Learning (2) Destination competitiveness in the post covid-19 era, (3) Tourism future under the pandemic situation, (4) Hospitality, and (5) Green finance.

Conference on Smart Tourism in the Greater Bay Area

There is a total of 153 people registered for the conference, and 143 people (111 onsite and 32 online) attended the conference (i.e. 93 % participation). The conference targeted all the self-financing institution's teachers and students. In addition, the conference had been promoted by the Federation of Self-financing Tertiary Education (FSTE). There are 30 respondents to the seminar feedback. For the feedback on the presentation, 60% of the participants think the speakers of the seminar excellently presented; 56.7% of participants think the presentation material (e.g. PowerPoint) is excellently presented; 63.3% of participants agreed the format of the seminar in sharing the latest research and development of the topic as presented are excellently delivered; 56.7% of participants rated excellent for the overall quality of the sessions in the seminar; 56.7% of participants think the seminar time allocation is well-established. Moreover, for the feedback on the organisation, 63.3% of the participants rated "Excellent" for the overall organisation of the seminar (such as location, facilities, support from organisers, etc.); 93.3% of participants indicated that they are interested in attending future conferences, workshops, or seminars organised by the PolyU, SPEED (Appendix H). Finally, the participants also suggested some topics for possible future conferences or seminars, including (1) Tourism demand forecasting in the post covid-19 world (2) Data analysis skills, (3) Intercontinental tourism, (4) Philosophy or religious studies, (5) Human Resources management, leadership or organisational behaviour, (6) Heritage tourism and (7) Robotic and AI applications in hotel, catering, travel, event, cruise and theme park.

7. Research-Related Outcome

7.1 Potential for development into research proposal and the proposed course of action
(Maximum half a page)

Due to the rapid advancements in artificial intelligence (AI) and its potential applications that have opened up new initiatives for the tourism industry, there is potential for development into a research proposal. For example, a research proposal investigating the current state of AI adoption in the tourism industry can be considered. The research context can still be the GBA and there are a lot of research opportunities to examine the impact, challenges and adoption of AI in tourism context in the GBA.

7.2 Research collaboration achieved
(Please give details on the achievement and its relevant impact)

- Knowledge exchange with TraVR Limited and Nottingham Trent University regarding the use of VR/AR in Smart Tourism and a journal paper has been submitted to the Journal of Travel Research.
- Knowledge exchange with Klook regarding the use of AI in the GBA, and idea sharing among academics and industry practitioners were conducted at the conference.

7.3 Any new development and/or challenging research topic(s) has / have been identified and any new initiative(s) for future research has / have been inspired.

- The comparison of VR CAVE and VR HMD in virtual tourism
- The role of AI in smart tourism in the GBA
- Sustainability and smart tourism destination

8. The Layman's Summary
(Describe <u>in layman's language</u> the nature, significance and value of the research activities, in no more than 200 words)

Due to COVID-19 pandemic, tourism was seriously affected. Thus, in order to enhance the competitiveness of tourism, AI in smart tourism in GBA would be the direction to reinvent the travelling experience of tourists with higher satisfaction. The latest development of AI in smart tourism in GBA can inspire new business initiatives and/or technology skills to the students and local citizens. They can develop their skills, competence, and knowledge for future career advancement. It can create long-term economic sustainability and well-being, providing beneficial effects to the economy and society.

Collaborating with experts in the tourism industry and renowned researchers from China (Southwestern University of Finance and Economics), Macau (Macao Institute for Tourism Studies, City University of Macau) and Hong Kong (School of Professional Education and Executive Development, The Hong Kong Polytechnic University), this IIDS project enables local and overseas academic scholars, teachers and industry practitioners in the Guangdong-Hong Kong-Macau Greater Bay Area to exchange ideas on the latest development and technologies applied in smart tourism through one conference and three seminars.

Part C: Research Output

9. **Recognised Conference(s) Paper(s) Related To This Project Was / Were Delivered** *(As Applicable)*
   (Please attach a copy of each conference abstract)

Month / Year / Place	Title	Conference Name	Submitted to RGC *(indicate the year ending of the relevant progress report)*	Attached to this Report *(Yes or No)*	Acknowledged the Support of RGC *(Yes or No)*
Aug/2022/ Hotel Icon, Hong Kong	VR tourism experiences and tourist behavior intention in COVID-19: an experience economy and mood management perspective	Smart Tourism in the Greater Bay Area	N/A	Yes	Yes
Aug/2022/ Hotel Icon, Hong Kong	Innovation and Technology: Building the Future of Smart Tourism	Smart Tourism in the Greater Bay Area	N/A	Yes	Yes
Aug/2022/ Hotel Icon, Hong Kong	The Smart Way of Trave	Smart Tourism in the Greater Bay Area	N/A	Yes	Yes
Aug/2022/ Hotel Icon, Hong Kong	VR & Metaverse Tourism Driving to the New Marketing Strategies	Smart Tourism in the Greater Bay Area	N/A	Yes	Yes
Aug/2022/ Hotel Icon, Hong Kong	Immersive Technologies and Tourism	Smart Tourism in the Greater Bay Area	N/A	Yes	Yes
Aug/2022/ Hotel Icon, Hong Kong	Live Streaming and Tourism	Smart Tourism in the Greater Bay Area	N/A	Yes	Yes
Aug/2022/ Hotel Icon, Hong Kong	AI Applications (Service Chatbots) in Tourism	Smart Tourism in the Greater Bay Area	N/A	Yes	Yes

10. **Research Personnel Trained** *(As Applicable)*

Name	Capacity
N/A	N/A

11. Other Impact *(As Applicable)*

(e.g. prizes, collaboration with other research institutions, technology transfer, etc.)

The Greater Bay Area's smart tourism industry has benefited significantly from the IIDS Conference, which has also changed the way that SPEED is taught. The teaching of SPEED tenets has undergone a revolution as a result of technological innovation and the incorporation of smart solutions in the tourism sector. By giving students access to real-time data, collaborative digital mediums, and immersive experiences, the conference has highlighted the potential of smart tourism to improve student learning. The results of this transition are immediately apparent in how SPEED subjects (Introduction to Tourism, Travel Agency Operations, Convention and Exhibition Operations, etc.) now makes use of cutting-edge tools like augmented reality, virtual reality, and artificial intelligence. Through interactive simulations, virtual field trips, and data-driven analysis, students may now participate in hands-on learning that helps them acquire critical competencies in digital literacy, problem-solving, and creative thinking. Unquestionably, the IIDS Conference has sparked a paradigm shift in SPEED education that will enable students to thrive in the Greater Bay Area's evolving smart tourist industry.

In addition to revolutionizing the SPEED teaching subject, the IIDS Conference has promoted collaboration with other academic institutes and aided technology transfer. The conference provided a forum for discussion, the sharing of best practices, and the exploration of novel approaches to incorporating smart tourism into the SPEED curriculum. In order to improve the teaching strategies and subject matter of SPEED, research institutions have been able to contribute their experience in fields like big data, artificial intelligence, and smart city development. The conference has additionally promoted technology transfer by giving industry experts a platform to present their most recent innovations and solutions in smart tourism. This has made it possible for academic institutions and educators to adapt and use these advances in technology in their instruction, guaranteeing that students have the knowledge and abilities they need for the developing tourist industry. Thus, in the context of smart tourism in the Greater Bay Area, the IIDS Conference has been crucial in fostering collaboration and technology transfer, enhancing the SPEED research capability.

12. Statistics on Research Outputs

	Peer-reviewed Journal Publications	Conference Papers	Scholarly Books, Monographs and Chapters	Patents Awarded	Other Research Outputs (please specify)	
No. of outputs arising directly from this project	1 (under review) Abstract attached in Appendix I	7 Conference Abstracts See Appendix J	N/A	N/A	Type	No.
					N/A	N/A

13. Public Access Of Completion Report

(Please specify the information, if any, that cannot be provided for public access and give the reasons.)

Information that Cannot Be Provided for Public Access	Reasons
N/A	N/A