出國報告(出國類別：其他)

出席「CAPA 2019 Asia Aviation Summit 亞洲航空高峰會」報告書

服務機關：桃園國際機場股份有限公司

姓名職稱：丁源宏 處長

派赴國家：新加坡

出國期間：民國 108 年 11 月 13 日至 11 月 16 日

報告日期：民國 108 年 12 月 23 日

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內容摘要

旨揭出國行程係本公司獲 CAPA 公司歐洲及全球講者活動總監 Corinne Hitching 邀請，出席 108 年 11 月 13 至 16 日假新加坡舉辦之 2019 Asia Aviation Summit 亞洲航空高峰會，本公司企業發展處處長丁源宏獲邀擔任與談人，專題討論主題為「機場設施限制對亞洲航空產業的影響」(Infrastructure Constraints in Asia)，除了探討亞洲各地區機場設施的限制對航空市場帶來的影響外，該高峰會亦探討對亞洲區航空發展趨勢、航空界新經營模式、新世代長程窄體客機崛起等座談子題。

CAPA 2019 Asia Aviation Summit 亞洲航空高峰會為航空產業之專業研討會議，主要邀請航空產業之產、官、學、研等不同領域專家，本次共邀集亞洲區約 300 餘位來自航空業、機場、觀光、政府及研究機構之高階代表與會。

本次高峰會探討主題在探究近期航空產業最新趨勢，包括 Flight shaming（環保意識抬頭）、大數據管理、航空業電子商務通路（New Distribution Capability）標準、機場發展限制、新世代長程窄體客機等項目，論壇預期長期發展亞太區市場仍需求旺盛，為全球各區域間發展需求最大的市場，惟因新的航空業經營模式產生的質變與量變，可能逐漸改寫產業遊戲規則，以新世代長程窄體機 A220-300 的問世，便可能促成新型態二線城市機場的崛起，降低仰賴大型樞紐機場之頻率，促成中小型機場也能發展有獲利空間的長程航線，提高發展成為洲際樞紐機場的機會。

壹、目的

旨揭出國行程係本公司獲 CAPA 公司歐洲及全球講者活動總監 Corinne Hitching 邀請，出席該公司 108 年 11 月 13 至 16 日假新加坡舉辦之 2019 Asia Aviation Summit 亞洲航空高峰會，本公司企業發展處丁源宏獲邀擔任與談人，專題討論主題為「機場設施限制對亞洲航空產業的影響」(Infrastructure Constraints in Asia)，除了探討亞洲各地區機場設施的限制對航空市場帶來的影響外，亦探討對亞洲區航空發展趨勢、新經營模式、新世代長程窄體客機的出現對全球航空市場的影響等子題。

CAPA 2019 Asia Aviation Summit 亞洲航空高峰會為航空產業之專業研討會議，主要邀請航空產業之產、官、學、研等不同領域專家，本次共邀集亞洲區共 300 多位航空業、機場、觀光、政府及研究機構之高階代表與會，本次會議邀請到多位亞太區航空公司高階主管，包括泰亞洲航空執行董事長 Tassapon Bijleveld、印尼格魯達航空總裁 I. Gusti Ngurah Askhara Danadiputra、印度最大民營航空公司 IndiGo 商務長 Willy Boulter、捷星航空總裁 Barathan Pasupathi、中國南方航空資深副總 Guo Xiang Wu (吳國祥)等，以及飛機製造商波音公司、空中巴士、巴西航空工業公司等，機場方代表則包括樟宜機場、馬來西亞機場集團、香港機場管理局、印尼機場、越南機場及本公司等機場方

代表等出席。

本屆 CAPA 亞洲航空高峰會探討主題在探究近期航空產業最新趨勢，包括 flight shaming（環保意識抬頭）、大數據管理、航空業電子商務標準、機場發展限制、新世代長程窄體客機等項目，論壇預期長期發展亞太區市場仍需求旺盛，為全球各區域間發展需求最大的市場，惟因新的航空業經營模式產生的質變與量變，可能逐漸改寫產業遊戲規則，以新世代長程窄體機 A220-300 的問世，便可能促成新型態二線城市機場的崛起，降低仰賴大型樞紐機場之頻率，促成中小型機場也能發展有獲利空間的長程航線，提高發展成為洲際樞紐機場的機會。

貳、會議行程與行前準備

一、會議行程

11 月 13 日	出國當日
11 月 14 日	CAPA 亞洲航空高峰會會議首日（完整議程詳下頁）
11 月 15 日	CAPA 亞洲航空高峰會會議次日（完整議程詳下頁）
11 月 16 日	返國當日

上圖：CAPA 亞洲航空高峰會座談盛況

108 年 11 月 14 日第一天議程

8:00	**Registration, Networking & Coffee**
9:00	**Chairman's Welcome** **CAPA – Centre for Aviation**, Chairman Emeritus, Peter Harbison
9:10	**Asia Aviation Outlook Keynote** **CAPA – Centre for Aviation,** Chairman Emeritus, Peter Harbison
9:30	**Airline Keynote: Resilient Skyline** **Thai AirAsia**, Executive Chairman, Tassapon Bijleveld
9:50	**Outlook: The keys to airline survival and success in an economic downturn** Over recent years we've been through a period of relatively benign external inputs, with low fuel prices supporting lower fares and a solid global economy supporting demand. This has propelled the industry into a period of unprecedented profitability (although US airlines, mostly operating domestically, have accounted for around half of this). The period of high profitability is unlikely to continue as oil prices, currently in the mid-USD60s/barrel for Brent Crude, creep up and as business and consumer confidence – at least, outside the US – slips rapidly.

The IMF recently issued a warning that the global economy is weakening “faster than expected” and downgraded GDP growth forecasts for 2019, and the European Central Bank has “substantially” revised downwards its economic growth projections for 2019, implying a slackening of demand in markets which have become increasingly price sensitive. *At the same time, the entire aviation system is undergoing a technology-led upheaval of volcanic proportions, challenging conventional norms and demanding new solutions to new problems (and opportunities).*

Airline management’s role is to prepare for and manage the airline prudently through good times and bad; in a downturn this means minimising the impact on profitability while remaining competitive.

- What would a downturn look like in Asia compared to the rest of the world?
- If growth continues how will the industry overcome problems like overcapacity and aggressive competition?
- What challenges face Asia? Is it just more of the same challenges?
- What impact will fuel prices have on the industry?

Moderator: CAPA - Centre for Aviation, Chairman Emeritus, Peter Harbison
Panel:

- **Garuda Indonesia**, President & CEO, I. Gusti Ngurah Askhara Danadiputra
- **IndiGo**, Chief Commercial Officer, Willy Boulter
- **Jetstar Asia,** CEO, Barathan Pasupathi
- **Thai AirAsia**, Executive Chairman, Tassapon Bijleveld

10:35	**Coffee Break & Networking**
11:05	**Airline Keynote: How Garuda Indonesia Survived in Turbulent Industry** **Garuda Indonesia**, President & CEO, I. Gusti Ngurah Askhara Danadiputra
11:25	**Emerging Aviation Powerhouses: China, India, Indonesia and Vietnam** Asia has enjoyed spectacular growth over the past several years. While China has clearly led the way, South Korea and Taiwan have also grown rapidly, and even Japan has had a resurgence in the past few years. After several years of double-digit traffic growth, supported by accelerating international expansion plans by its home carriers, India is expected to emerge as the world's third largest aviation market within the next five years. • What impact will this have on aviation in the region? • Can both powerhouses sustain this growth? • How will infrastructure constraints impact growth? **Moderator: National University of Singapore**, Professor of Law, Alan Tan **Panel:** • **China Southern Airlines**, SVP of International and Corporate Relations, Guo Xiang Wu • **Hong Kong Airlines**, Vice President, Ben Wong • **Malaysian Aviation Commission**, Director - Aviation Development, Germal Singh Khera

- **VietJet Air**, Member of Board of Directors, Cuong Chu

12:10 Distribution and digital transformation: Where we are up to with NDC?
Travelport, Global Head of New Distribution, Ian Heywood

12:25 Challenges to traditional distribution and selling in Asia's fast changing market
Legacy distribution systems have for decades presented airlines with the twin problems of high costs and product commoditisation. In efforts to address these issues, a handful of carriers throughout the world have invested heavily into establishing their own API channels with agents, while the concurrent push by IATA for airlines to implement the NDC standard has encouraged the industry to adopt a retail focused approach to distribution.

The GDS will also need to evolve in order to remain relevant and to compete effectively against other intermediaries and aggregators such as metasearch companies (some of which now have direct booking capabilities), as well as digital behemoths such as Amazon, Google, and Facebook - to gain a slice of the pie.

But as airlines work on enhancing their retail offering and improving their merchandising capability via both direct and indirect channels, a resounding message from industry players is that airlines need to consider the importance of mobile and messaging platforms, which are slowly replacing the desktop as the preferred interface for researching and booking travel.

- Is this increasingly fragmented and complex commercial and technological distribution landscape sustainable? How will business models evolve in response? Is there a need for a direct connect aggregator?

- Should airlines build lots of direct connects or revert back to lean, centralised distribution channels?
- Who is going to be offering services to bridge the gap between airlines/aggregators that are NDC compliant and those that aren't? Will it be the GDS and IT providers, other airlines or speciality providers?
- How are newer intermediaries adding value to airline distribution?
- How do airlines enhance their digital shopfront? Are airlines over-emphasising the importance of airline.com over mobile messaging platforms and bot technologies?

Moderator: Travelport, Global Head of New Distribution, Ian Heywood
Panel:

- **Corning**, Asia Strategic Sourcing Manager, Travel and Professional Services, Peter Koh
- **IATA**, Director, Industry Distribution Programs, Yanik Hoyles
- **Japan Airlines**, Vice President and Head of Global Sales, Steve Smith

13:05	**Lunch & Networking**

AVIATION STREAM		Corporate Education Forum Stream
14:00	**Infrastructure Constraints in Asia**	

Infrastructure remains a common issue around the world and especially in Asia, forcing airlines in some markets to grow at secondary airports draw on different catchment areas. The Philippines (Manila), Indonesia and Vietnam are all problematic at the moment, and Bangkok's new three airport policy is worth debating.
These infrastructure constraints in Asia are impacting greatly on aviation. This session will review:

- The role of the airline and airport relationship;
- What lessons can be learned from the rest of the world?
- How does Route Development look for the future in Asia? Will congestion be an impediment?
- Do Asian airports and air navigation service providers have the capacity to accommodate the growth ambitions of the region’s carriers?

Moderator: ASM Global, Senior Consultant, Omar Hashmi

Panel:

14:00 **The accommodation outlook and technology innovations education forum.**

Brought to you by Booking.com

What do we want?
Is this session we ask the custodians of key corporate travel programmes in Asia to bring their "burning" questions related to their accommodation programmes. Hear how other buyers are feeling, learn from their programmes and voice your own opinion.

The experts weigh in
In response to concerns from corporate travel buyers, we bring together key industry experts to educate our audience on:

- Benchmarking Asia against the international average?
- Reviewing the supply/demand balance - which side of the ledger are we at in 2019?

	• **Bangkok Airways**, Advisor to Board of Directors, Peter Wiesner • **Cam Ranh Airport Terminal JSC**, COO, Sulaiman Zainul Abidin • **Hong Kong Airlines**, VP, Ben Wong • **Taoyuan International Airport**, Director, Yuanhung Ting
14:40	**Air Finance Outlook** As with the funding of any business, those providing any type of funding will consider the business model/management, the quality of the corporate credit and any underlying assets to be financed. In each of these areas, financiers look at a wide range of factors. In many ways, LCCs are no different from full service airlines in this respect. The LCC business model is now well established throughout the world and low cost operators are among some of the biggest airlines globally.

	• What's really happening locally with rates, occupancy rates, new properties and seasonality? • How can buyers create a high performing hotel programme, and reduce spend? • What are the best practices for negotiating rates? **Moderator: CTC**, Executive Director, Benson Tang [Download Presentation] **Panel:** • **Accor Asia Pacific,** Vice President Sales Asia Pacific, Kerry Healy • **Autodesk**, Senior Director, Global Travel and Meeting Services, Bruce Finch • **Booking.com**, Manager Business Travel Partnerships, Lola Kursataite • **FCM Travel Solutions**, Account Manager Leader, Lionel Wellesley • **Siemens**, Commodity Manager ASEAN, Jane Sim

Nevertheless, it is still regarded to some extent as a newer model, and financiers will typically take a more rigorous approach when considering the provision of funds to start-up and younger airlines. Even where the model is not really very new, low cost operators often pursue higher growth rates, and this can also be a source of additional risk.

Perhaps because many low cost airlines typically have shorter track records and are less well capitalised, the share of the world LCC fleet that is leased is higher than for the total fleet of all airlines. In particular, LCCs make significant use of sale and leasebacks.

- Finding the funding – debt and equity – to support expansion. Is the money there?
- What special features need to be considered in funding FSC and LCCs?
- Which funding models are most attractive for different business models?
- What roles have the OEMs played in expansion?

- **STR**, Business Development Manager - Southeast Asia, Ma Fenady Uriarte

	• What is the risk profile of an independent LCC vs a subsidiary? • Should airlines lease or purchase outright from the OEM? **Moderator: Watson Farley & Williams**, Partner, Alan Polivnick **Panel:** • **BOC Aviation**, Managing Director & CEO, Robert Martin • **ICBC Aviation Leasing**, Managing Director, Market Planning, Ross McKeand • **Korea Development Bank**, SVP Aviation Finance, Dong Kyun Ha • **PwC**, Chief Consultant Aviation Business Services, Johnny Lau	**14:40**	**Technology and payments education forum:** **What do we want?** In this session we ask the custodians of key corporate travel programmes in Asia to bring their "burning" questions related to their technology and payments. **The experts weigh in** In response to concerns from corporate travel buyers, we bring together key industry experts to educate our audience on: • Virtual payments and the benefits for corporate programmes; • Maximising reporting capabilities; • New technologies available to improve payments and expense. **Moderator: CTC**, Executive Director, Benson Tang **Panel:**

- **Apple**, APAC Travel Manager, Patricia Chua
- **ATPI**, Chief Innovation and Technology Officer & Managing Director Asia, Ali Hussain
- **Mastercard**, Director Business Development, Peter Rand
- **Oldendorff Carriers Singapore**, Travel Manager, SherLi Lim

15:20	**Coffee Break & Networking**
16:00	**Frequent Flyer and Loyalty Programmes - Driving traveller value and airline revenue**

Frequent flyer programmes have been a common part of many airlines' loyalty strategies over several decades now. But they have evolved from elemental loyalty models with modest money-making strategies into major revenue earners. With growing industry maturity and drastically improved technology and data analytics capabilities, the nature of FFPs is being transformed.

The contrast between these programmes and the activity of flying is dramatic. One has limited capital investment needs and generates cash almost merely by existing; the other, ringed by safety and economic regulation is highly capital intensive and even more risky, in exceptional circumstances returns a modest profit.

There are however few exponents who have climbed the heights of optimising the FFP business – for it is a business now, with a sideline of loyalty.

Qantas is a leader in the field. It is for example targeting EBIT of AUD500 million from its FFP by 2021. To put that in context, in FY2019 Qantas returned a total profit of just over AUD1 billion.

And Air Canada, arguably the first airline to create a genuine financial model for FFPs early this century, having sold off its programme, has recently re-acquired it.

With the advent of sophisticated data analytics, FFPs have also become much more than an internalized activity, with the ability now to drive change right across the business, from revenue management to network planning and beyond.

In short, FFPs have become a valuable commodity in more ways than one. But, mingled with their poor cousins, the flying part of the airline, market valuations are often suppressed.

- How important is loyalty in an age of commoditisation?
- What are the strategies behind smart FFPs?
- How valuable is data analytics as information is accumulated?
- What are the arguments for and against owning and hiving off?
- What other avenues exist to increase customer loyalty?

Moderator: On Point Loyalty, Managing Partner, Evert de Boer
Panel:

- **Aimia**, CEO, Jeremy Rabe
- **Cebu Pacific**, General Manager Loyalty, Nik Laming
- **Jet Privilege**, Chairman, Gavin Halliday
- **Standard Chartered Bank**, Global Head of Alliances, Alice Goh

16:40 How Data Analytics is reshaping the industry

For decades airlines carelessly discarded information about their customers, leaving this powerful tool in the hands of intermediaries and the GDSs. As airlines sought to wrest back market power and to reshape their focus from flying towards distribution and other revenue forms, this coincided with vastly increased computing power and an ability to assimilate vast amounts of data into something meaningful.

This is transforming the way airlines think and work, from operational analytics to leveraging data to generate better commercial returns. But it is still early days and the potential of this art has many forms still to display. And of course it's not just airlines who are playing in this park. Few organisations have more consumer data than Facebook, Amazon, Google – and the numbers of potential players is growing by the day.

Inevitably some airlines are more advanced than others, so the gap between big and small tends to grow.

- Exploring categories of activity where analytics is being used effectively

- Converting data to save costs and generate revenue. What streams are possible?
- Who has the capability to use data effectively? – is outsourcing necessary?
- Will the big consumer data aggregators play in the airlines' park?

Moderator: APEX, CEO, Dr. Joe Leader
Panel:

- **China Eastern Airlines**, Head of Data Labs, Shawn Wang
- **Google**, Industry Manager, APAC Travel, Axel Bader
- **Skyscanner**, VP, Commercial, Hugh Aitken
- **Tata SIA Airlines (Vistara)**, Chief Innovation & Information Officer, Ravinder Singh

17:20 **Q&A with VietJet**
Moderator: CAPA - Centre for Aviation, Chairman Emeritus, Peter Harbison
VietJet, President & CEO, Thao Nguyen Thi Phuong
Closing Remarks
CAPA - Centre for Aviation, Chairman Emeritus, Peter Harbison

17:35 **Closing Remarks**
CAPA - Centre for Aviation, Chairman Emeritus, Peter Harbison

17:40	**Welcome to Networking Drinks** **Malaysia Airports**, General Manager, Airline Marketing Division, Sallauddin Mat Sah
17:45	**Day 1 Close**
18:45	**Pre-Dinner Drinks** **Hosted by Malaysia Airports**
19:30-22:00	**CAPA Asia Pacific Aviation Awards for Excellence** **Hosted by Travelport**

108 年 11 月 15 日第二天議程

8:00	**Registration, Networking & Coffee**
9:00	**Chairman's Welcome** **CAPA – Centre for Aviation**, Chairman Emeritus, Peter Harbison
9:05	**Airline Keynote** **9 Air,** Chairman of the Board, Guangping Ji
9:25	**Urban Air Mobility – changing the competitive landscape of short haul aviation as barriers to entry are lowered** Between 2000 and 2018, the populations of the world's cities with 500,000 inhabitants or more grew at an average annual rate of 2.4 per cent. However, 36 of these cities grew more than twice as fast, with average growth in excess of 6% per year. Of these, 28 are located in Asia, with 17 in China alone. Furthermore, two-thirds of the global population will live in cities by 2050 and the number of megacities is predicted to rise from 33 to 43 within the next decade – again, many of which are located in Asia. With rising populations, comes a need for greater mobility solutions. As flying cars become the next step forward in innovation, Asia has become a testing ground for a number of urban air mobility vehicles, one of the latest examples being in Singapore where German company, Volocopter tests its next round of flight tests for its urban air mobility vehicle.

In the session, delve into integrating traditional aviation with the disruptors and the potential challenges and impacts this presents to the industry, now and in the future.

- Is urban mobility an opportunity for airlines or a threat?
- Are airlines likely to be the first to adopt this new technology?
- What is the likely competitive impact for airlines that operate short-haul and regional routes, especially for the corporate travel market?
- What is the predicted impact of the lowered barriers to entry across the market?

Moderator: CAPA – Centre for Aviation, Chairman Emeritus, Peter Harbison
Panel:

- **Japan Airlines**, VP, Marketing & Strategy Research, Akihide Yoguchi
- **NEO Aeronautics**, Co-Founder/Avionics Systems Spec, Charles Aravinda

10:10 **How the next generation narrow and wide-body aircraft will change the shape of air travel in Asia**

New generation aircraft offer game-changing economics and range for LCCs and FSCs. Airlines across the spectrum of business models are using these new tools to extend their network reach. While these advances create the potential for many new markets, route developers still face the inherent challenges of long haul flying. Maintaining consistent and profitable demand in those markets is paramount, especially once airport incentives are no longer available. However, with the exception of a few key players, Asian carriers have not yet fully taken advantage of the range of new aircraft technology. This is about to change though with the likes of: Cebu Pacific, Saudia, and Qantas Airways (for subsidiary Jetstar) ordering A321XLR at the 2019 Paris Air Show

- What examples of implementation of new aircraft types has been successful around the world?
- What opportunities still exist to tap into new aircraft types?
- What routes will be opened up to the Americas thanks to new aircraft technology?

Moderator: Frost & Sullivan, Consulting Analyst, Shantanu Gangakhedkar

Panel:

- **Bangkok Airways**, Advisor to Board of Directors, Peter Wiesner
- **IndiGo**, Chief Commercial Officer, Willy Boulter
- **PwC**, Chief Consultant, Johnny Lau

10:55	**Coffee Break & Networking**

11:30	**Travel Tech Roundtable - Where to next?** We invite leaders from across the aviation and technology landscape to discuss standout technological innovations and trends that have shaped the aviation industry over the last year and identify any key learnings. Panellists will also share their projections on how the industry will evolve with the introduction of new technologies in 2020 and beyond. • How can organisations turn big data into actionable insights that intelligently understands and delights the customer (and enhances revenue)? • How can organisations use technology to further improve the customer experience? • What are the opportunities and implications of AI and robotics? What opportunities exist to become more efficient in their operations with the implementation of AI and new technologies? **Moderator: Travelport**, Global Vice President & Global Head of Air Travel Partners, Damian Hickey **Panel:** • **China Eastern Airlines**, Head of Data Labs, Shawn Wang • **IBM**, Travel & Transport Sector Leader APAC & MEA, Michael Parsons • **Skyscanner**, Commercial Director, Gavin Harris
12:15	**Airline Keynote: A 40 Year Journey** **SriLankan Airlines,** CEO, Vipula Gunatilleka

12:35	**Closing Remarks** **CAPA – Centre for Aviation**, Chairman Emeritus, Peter Harbison
12:40	**Lunch & Networking**
13:40	**Close of Summit**

二、行前準備

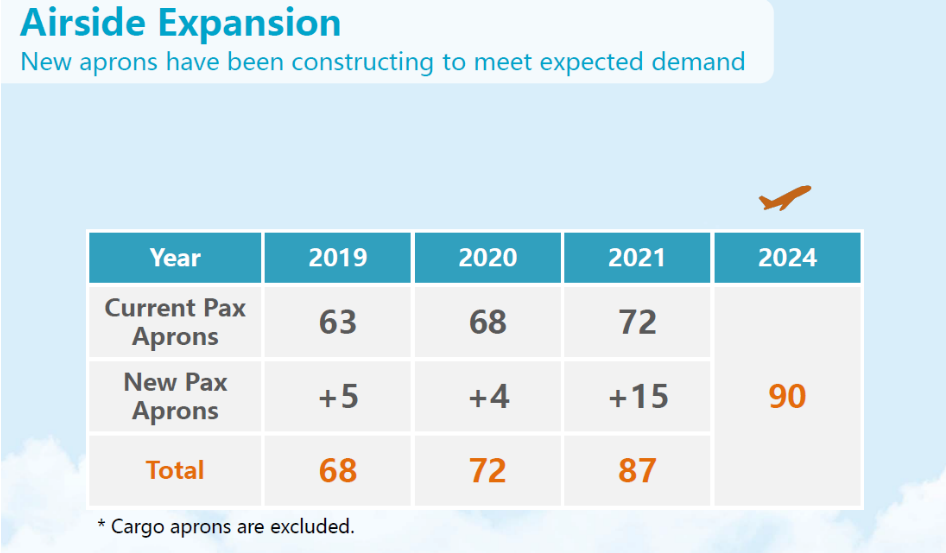
此次受邀出席首日下午 14:00 場次之座談，座談主題為”**Infrastructure Constraints in Asia”**，與來自英國航線發展研究顧問公司 ASM (隸屬於英國 Informa Markets 集團)資深顧問 Omar Hashmi 共同與談，行前針對預定討論的子題交換意見，談參稿整理如下：

1. **就桃園機場的長期發展觀點，是否認為跑道與航廈的容量瓶頸不利於航空產業之擴張與發展？**

   擬答：東亞地區機場擴張可能是全球競爭最激烈的區域，但各機場容量不足的問題也十分嚴重。除了跑道與航站樓容量限制外，空域管理與空中航路交通也影響機場起降容量的關鍵因子，對航空產業擴張有非常重要的影響力。尤其是桃園機場位於全球最忙碌的 A-1 航路之下，同時面對軍用機場與軍用演訓空域的多重限制下，都嚴重限制了桃園機場跑道容量。

   雖在桃園機場目前兩條跑道、兩座航廈及有限的停機位數量下，今年仍維持約 4~6%的成長率，的確基礎設施的不足已嚴重影響到桃園機場的發展，因此機場方目前除了加速航廈與停機位的擴建腳步外，同時引進智慧化服務設計、市區預辦登機、行李處理系統 BHS 等，提高旅客與行李處理效率；更重要的，機場當局正在研究透過建構 A-CDM 機場協同決策管理

平台，透過與航空業者的合作，進行航機與旅客流的大數據管理，有效提高停機坪周轉率，極大化資源使用效率。



Airside Expansion

New aprons have been constructing to meet expected demand

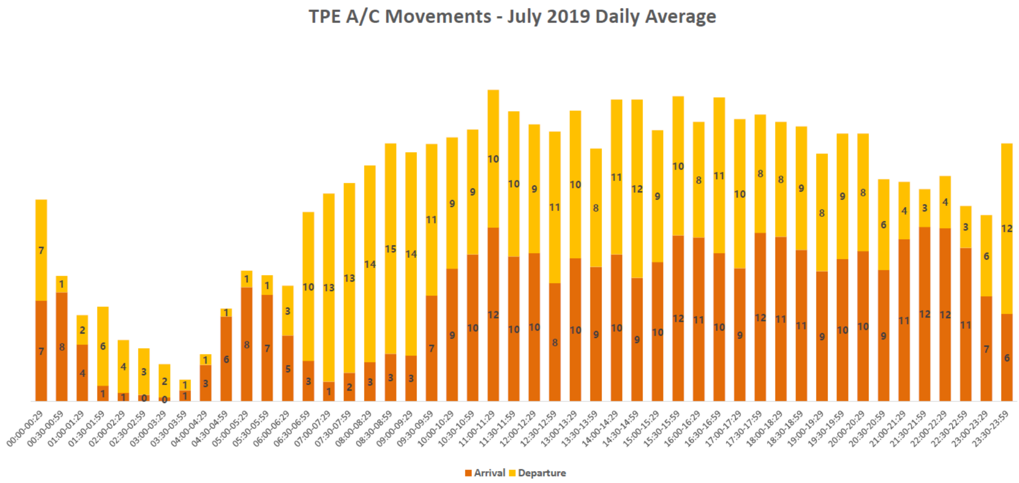
Year	2019	2020	2021	2024
Current Pax Aprons	63	68	72	
New Pax Aprons	+5	+4	+15	90
Total	68	72	87	

* Cargo aprons are excluded.

上圖：桃園機場 2024 年前停機坪擴建規劃數

2. 哪一座亞洲機場可能是最擁擠的？對旅客與營運的影響可能有哪些？

擬答：與鄰近超過 4 千萬旅客量的大型機場相比，桃園機場可能是尖峰小時航機運作最為擁擠的機場，在有限的停機位供給量下，桃園機場每座停機坪周轉率可能高達平均 12 架/天，效率高但營運壓力也大。因此機場方亦在研議透過時間差異定價、準點率獎勵計畫等政策提高航空公司停機位資源使用效率與準點率，並確保地勤作業安全無虞。



上圖：桃園機場 2019 年 7 月最尖峰日分時起降數（每 30 分鐘），最尖峰已屆上限 50 架次/時，90 架次/連續 2 小時

3. 您對於亞洲未來機場的發展趨勢有何看法？北京大興機場的啟用可能為機場圈樹立全新趨勢，隨著亞洲機場旅客量的成長，是否有可能將會有更多空間保留給旅客營運，而壓縮到開放空間或旅客休憩空間？

擬答：剛好相反，隨著旅客量的增加，更多遠端、智慧化、自動化的服務設計將會大幅減省航廈作業空間，旅客在航廈內將可享有更多休憩空間與時間。

4. 全球最忙碌的天空可能就是亞洲，10 條最繁忙的國際航路（以航班數計）就有 9 條在亞洲。在歐洲有 Eurocontrol 作為全歐跨國空域管理的機構，在亞洲有沒有這樣的機會做跨國的空域整合管理？

擬答：亞洲的地理特性與歐洲迥異，航空政治也非常複雜，整合難度相當高。或許從各國航管機關定期建立對話機制會是比較務實的出發點。

5. 同樣擁擠的倫敦希斯洛機場對於時間帶管理有非常嚴格的政策，我們看到 IATA 國際航空運輸協會近期也更新了時間帶管理準則（IATA World Slot Guidelines），在您的機場有沒有機會也能創造如此的高效率？

擬答：桃園機場的時間帶管理嚴格遵守 IATA 時間帶管理準則，並交由公正第三方時間帶協調人嚴格執行時間帶的分派，未來機場方將進一步與時間帶協調委員會合作，就地面上的設施條件做最佳化使用，律定停機位資源使用規則，嚴格監督準點率，提高停機位使用效率，這些都將有助於優化時間帶的使用效率。

上圖：為本公司出席代表與座談主持人 Omar Hashmi 會前交流

參、會議紀要

1. 大會主席開幕演講（Peter Harbison, CAPA）：遊戲規則改變中的航空產業

(1) Flight shaming：

- 因環保意識抬頭，特定國家如瑞典竟出現短程拒搭飛機的公民運動，輿論壓力與公民意識衝擊當地航空產業，短程航線座位數供給出現下降，對於低成本航空業者衝擊最大。
- 部分政府開徵航機空汙排放稅也象徵政府回應環保訴求的政策，都可能進一步衝擊航空業發展。而根據 IATA 頒訂的排放目標，2009 到 2020 年間平均每年燃油效率應提高 1.5%，2020 年前應達到碳中和目標，2050 年應降低碳排放量達 50%(與 2005 年作為基準比較)。

- 下圖顯示瑞典今年度 1 至 9 月旅客量明顯下滑 2.3%。而 2019 整體座位數供給量亦明顯已低於前兩年。

- 反觀富裕人口越來越多的亞洲市場，尤其是對於不斷增加的中產階級族群，航空旅行仍具有極大吸引力，跨國旅行的負擔能力也提高，且亞洲地區與歐洲地理條件迥異，較少有跨國地面運輸的選擇，故亞太區航空旅遊市場仍有極大成長機會。

(2) New Distribution Capability（NDC）：IATA 推出航空公司與旅遊業者之間的電子商務平台協定標準，透過這套開放標準將有利於旅遊業者導入網路銷售通路，透過平台銷售將能輕易推動企業 B2B 或旅客 B2C 等販售通路，並能有利於了解旅客特性、精準行銷，將更能推動各式差異化旅遊產品，有更高即時性，創造更為透明的銷售通路，改善旅客購買體驗。但由於此

標準需大幅度改變既有航空銷售平台，仰賴所有業者共同投資，因此阻力與反對聲浪大，多數業者質疑目前各航空業者自行研發機票或旅遊產品銷售通路已能滿足多數電商需求，且 LCC 業者多自行架設電商銷售通路,故業者不願重複投資。

(3) 大數據應用：電子商務巨擘如亞馬遜、臉書、微信、LINE、優步等新型態通路平台或服務供應商，已將網路科技及 IoT 發揮淋漓盡致，透過大數據雲端計算，服務商能精準掌握甚至預測消費者的下一次消費，進而精準行銷，航空產業在資通訊應用與大數據分析上似乎望塵莫及,仍為傳統通路所壟斷，因此 IATA 發展之 NDC 標準即是為航空業者的網路銷售流程建立電子網絡化的共通標準，加快資通訊腳步，迅速接軌。

(4) 機場當局與航空業者的資訊交換並不普遍：機場當於與航空業者若能合作資訊交換,將有助於機場營運效率與旅客滿意，亦有助於航空公司提供旅客服務。

(5) 可飛更遠航程的機型問世：目前嘗試購買寬體或窄體長程客機多以低成本航空業者為主，新航太科技讓窄體客機越飛越遠，將會衍生全新商業模式，創造全新航網布局。根據 CAPA 調查，全球窄體客機訂單仍超過一半集中在亞洲地區。CAPA

研究預測，未來 A321XLR（航程在 8770 公里以內）等類似新型態長程窄體客機（其他包括 A220、A321LR、波音 MAX 等）將可能創造主流，類似過去 A380 或 777 所帶給全球航空產業版圖帶來的影響，研究預測未來可能因為新型態窄體長程客機的出現，伴隨傳統航空樞紐多半出現容量不足問題，較小型的樞紐機場將可能崛起。

上圖：CAPA 數據顯示新世代長程窄體客機如 A321XLR 航程若以東南亞為樞紐，航程將可同時跨歐非澳紐及遠東地區市場

(6) 變革中的航空公司聯盟：傳統航空公司聯盟似乎不再對所有航空公司成員具有吸引力或影響力，航空業者仍傾向尋求對自己最有利的合作夥伴，逐漸打破聯盟疆界。

2. 專題演講(Tassapon Bijleveld，泰亞洲航空副總裁)：打造具有韌性的航空事業 Resilient Skyline

上圖：泰亞洲航空副總裁 Tassapon Bijleveld

(1) 打造具有韌性的航空公司：透過大數據與即時分析航空公司的數據生態系統（Airline data ecosystem）。

(2) 大數據來自四大生態系統：旅客、航機、航廈及停機坪。

- 旅客數據：聯絡資訊、人口統計變項、忠誠度、社經與生活型態資訊、行動交易歷史資訊等。
- 航機數據：引擎與零件數據、FOMAX(flight operations and maintenance exchanger）數據、維護數據、零件交易歷史資訊等。
- 航站數據：機艙行李重量、旅客重量、旅客移動、櫃台交易、空橋操作、等候時間管理等。
- 停機坪數據：準點率、位置，溫度等。

(3) 開源節流：透過增加週邊產品銷售、提高產品服務黏著度、建立優惠折扣與獎勵政策以增加收益；透過提高燃油效率、優化航機調度與周轉率及綠色航班營運政策以降低整體營運成本。

(4) 航空業可鼓勵旅客學習自助式服務，降低航空公司在旅客服務上的作業成本，同時提供優惠與會員獎勵政策，留住顧客。

3. 座談一：在全球景氣衰退下的航空業生存之道 The keys to airline survival and success in an economic downturn

上圖：座談一場次與談貴賓合影

(1) 背景說明：

- 過去幾年低油價時期，航空公司推出低票價卻也迎來全球旅行暢旺需求，創造了航空業前所未見的榮景。
- 隨油價開始攀高（布倫特原油來到每桶 60 美元）而全球（除美國外）消費者信心開始衰退。

- 全球景氣衰退信號出現，國際貨幣基金最近發布一項警告，全球經濟即將以超乎預期的速度開始衰退，並且調降 2019 年的 GDP 預測。歐洲央行也大幅調降對於 2019 年的經濟預測，也暗示市場對於價格將更為敏感保守，與此同時，航空業也正大幅導入智慧科技，期望能透過智慧化解決新問題。
- 航空公司管理者的角色在於隨時做好準備因應景氣循環，降低景氣衝擊並維持競爭能力與獲利力。

(2) I. Gusti Ngurah Askhara Danadiputra, President & CEO, 印尼格魯達航空表示，印尼航空除了改善員工體驗，提高整體旅客服務滿意外，也同步在 MRO、空廚及貨運等項目進行布局，多角化航空業務以分散風險提高獲利機會。

4. **座談二：崛起中的新航空市場-中國大陸、印度、印尼及越南**

上圖：座談二與談貴賓合影

(1) 具有人口紅利的亞洲市場，航空產業在過去數年內出現驚人巨大的成長。特別是中國、南韓與台灣也共蒙其惠，成長速度驚人。甚至連沉寂已久的日本航空市場也在過去數年有了起色。

(2) 印度、越南與印尼等人口紅利且中產階級開始崛起的新興市場，其航空產業也開始加速國際擴張計畫，特別是印度將可望在接下來五年內，成為世界第三大航空市場。

(3) Guo Xiang Wu（吳國祥）**,** SVP of International and Corporate Relations, China Southern Airlines 表示：中國與美國雙邊已經不再是一家航空業者一條航線的原則，隨著南方航空將40%的運能轉移至大興國際機場後，預計航空政策將會更加寬鬆，並開始加速擴張國際航網。

(4) Ben Wong, Vice President, 香港航空：隨著香港機場第三跑道計畫完工，預計將可從目前 68 架次跑道容量一舉推升至超過 100 架次。而香港機場也將會進一步作為粵港澳大灣區市場共 7700 萬人口市場的主要國際樞紐，透過便捷的直通粵港澳內地的交通網絡，透過複式運輸（Inter-modal

transportation）整合海陸空交通聯票，創造旅客更便捷的選擇。

5. 座談三：亞洲區域的機場限制對航空產業的影響

上圖：本場次與談貴賓合影，亦為桃園機場公司出席與談場次

(1) 機場基礎限制始終是一個全球共通議題，特別在亞洲，迫使航空公司在部分市場中開始將服務能量移轉至二線城市。菲律賓馬尼拉、印尼及越南此刻都正面臨機場容量不足的議題，甚至連曼谷兩座機場都面臨飽和，開始評估興建第三座新機場的可能性。

(2) 亞洲機場面臨容量不足的考驗，將直接影響航空產業發展，在本場次邀請了香港航空、曼谷航空、越南芽莊金蘭國際機場及本機場進行座談，分享近期對亞洲航空產業的觀察。

(3) Sulaiman Zainul Abidin，越南芽莊金蘭國際機場 COO：越南航空市場受惠於近年經濟成長動能，國際旅行人口逐年快速擴張，越南新興航空業者如越捷航空、越竹航空等爭食航空市場大餅，近年隨著國內旅遊與國外觀客客逐年攀升，越南機場也的確面臨擴建壓力。

(4) Yuanhung Ting 丁源宏，桃園機場公司企業發展處處長：在東亞地區航空發展的確受限於機場容量限制而成長有限，桃園機場近年仍有約 4-6%的年成長率，機場容量議題應同時從空側與陸側兩方面來做系統思考。除了航廈容量服務水準外，空側設施如跑道容量、空域交通及也是關鍵。目前桃園機場正在積極努力擴建第三航廈與新停機坪，同時也自兩年前開始引入智慧化旅客流程，包括市區預辦登機服務、自助報到、自助行李托運系統及 e-Gate 自助證照查驗系統等；在新航站與停機坪啟用之前，機場方也希望能透過智慧化監測掌握航機動態資訊，例如航機準點率，以有效提升航機在機坪使用的效率。

(5) Peter Wiesner，曼谷航空董事會顧問：曼谷航空近年深耕泰國境內航網，並積極吸引北美地區旅客經桃園機場中轉來泰國旅遊，並與中華航空、長榮航空共掛班號，善加利用桃園做為

銜接北美轉運之優勢，曼谷航空本身也規劃希望可直航桃園，但為了銜接北美抵達桃園航班旅客方便接轉，希望可於桃園機場過夜停靠，惟因受限於機場過夜停機位不足，尚無法正式開航。另外因曼谷兩大機場也出現尖峰壅塞問題，政府目前正評估興建第三座國際機場之計畫。

(6) Ben Wong，香港航空副總裁：香港機場目前正在興建第三跑道與新廊廳計畫，希望落成啟用後可滿足尖峰小時上百架次起降架次及上億人次的吞吐目標。由於港珠澳大橋與內地高鐵相繼通車，香港仍有機會可作為服務大灣區 7,700 萬人口國際旅行需求，航空業者亦可聯合海陸路交通業者規劃海陸空聯票，擴大服務市場。因此雖然深圳機場、廣州白雲機場相繼有擴建計畫，但仍相信香港機場具有國際空運之領先地位與機會。

(7) 主持人 Omar Hashmi：除了機場不斷追趕擴建基礎設施能量的同時，空域交通管理也深深影響著空域流量的處理能力。在歐洲，EUROCONTROL 作為一個跨國空域聯管的中立機構，能具體整合促進區域的空域流量處理效率，而在成長潛力最為驚人的亞太地區，有沒有機會可以進一步整合呢？

(8) 桃園機場：空域聯管需要非常高默契的跨國外交合作，目前

在亞太地區由於地緣政治發展相當複雜，整合的難度也非常高。

(9) 主持人 Omar Hashmi：同樣擁擠的倫敦希斯洛機場對於時間帶管理有非常嚴格的政策，我們看到 IATA 國際航空運輸協會近期也更新了時間帶管理準則（IATA World Slot Guidelines），在您的機場有沒有機會也能創造如此的高效率？

(10) 桃園機場：本機場的時間帶管理嚴格遵守 IATA 時間帶管理準則，並交由公正第三方時間帶協調人嚴格執行時間帶的分派，未來機場方將進一步與時間帶協調委員會合作，就地面上的設施條件做最佳化使用，律定停機位資源使用規則，嚴格監督準點率，提高停機位使用效率，這些都將有助於優化時間帶的使用效率。另外補充一點，機場的運作效率無法單靠機場唱獨角戲，仍需要航空業者及所有利害關係人的一同配合，以桃園機場的台北車站預辦登機服務為例，自兩年前開通啟用以來僅六家航空業者加入，相信航空公司是否評估加入仍是成本考量優先，但為了提高旅客服務品質與效率，機場仍由衷期盼航空公司能長遠考量加入智慧化服務，相信對於長期的成本減省具有一定效益。

6. 座談四：都會區空中交通新科技– 短程航空運輸模式的革命性發

展

(1) 自 2000 到 2018 年間，全球超過 50 萬居民的城市的都會區人口數平均年成長率超過 2.4%；而更有超過 36 座城市成長速度平均每年成長超過 6%，大部分都在亞洲，有 17 座城市是在中國大陸。

(2) 全球人口的 2/3 將在 2050 年前集中在大型都會，可以預見的是都會區的交通運輸需求與挑戰將會更加嚴峻。

(3) 隨著最新航空運輸科技如小型飛行器（飛天車）甚至是無人飛機相繼成熟，目前已經可見到投入測試與載貨的應用服務，歐美地區國家已經開始評估測試使用小型飛行器，提供都會區短程航空運輸服務。

(4) 參與本座談會之日本航空市場與策略研究部門 Akihide Yoguchi 副總經理表示，都會區短程航空運輸載具對於傳統航空公司業者可能是新商機，雖然眼前市場環境、法規管制

與技術成熟度尚待訂定與討論，但可以想見在全球許多大型都會區都有越來越嚴重的大眾運輸問題，因此小型載客飛行器的出現將可能應用於都會區航空運輸，將可能為人類帶來下一波革命性的轉變。

(5) 小型載客飛行器目前遭遇到的問題盤點：

- 電池技術
- 航空管制規劃與飛安管理
- 航空法規修訂及放寬
- 對於傳統航空業者的衝擊影響

7. 座談五：新世代窄體機與寬體機將如何改變全球航空市場

(1) 新世代飛機將可能改寫航空產業界的遊戲規則，如空中巴士A220-300 的問世將可能重新洗牌樞紐機場地位，由於此類窄體客機經營洲際長程航線將有獲利空間，可能間接促成新型

態二線城市機場的崛起，降低仰賴大型樞紐機場之頻率，促成中小型機場也能發展成為洲際樞紐機場的機會。

以下說明新世代窄體客機幾項特點：

- 空間更寬敞舒適：以空中巴士 A220-300 機型為例，該款航機由於窄體機座位數少，可容納較大座位空間、較大開窗及更安靜舒適的搭乘環境，提供了有如大型寬體客機可以提供的舒適感受，扭轉了一般人傳統對於窄體客機空間小座位擁擠的負面印象。
- 燃油效率提高：窄體客機由於使用更先進的複合式航材及鋁材以及最新技術的燃油引擎，大幅減輕機體重量，因而將更提高燃油效能。
- 飛行距離長：新世代窄體客機飛行距離可能長達 3700 英哩（約 5955 公里），相當於美國西岸飛抵夏威夷，或是自紐約飛抵倫敦。

上圖：CAPA 統計數據顯示目前全球窄體機訂單以亞洲為最大市場，佔全球總訂購量約 50%

(2) 整體來說，空中巴士推出 A220 系列客機雖然仍在取得美國 FAA 認證中，但的確已成功量產，A220-100 為目前投產中最小型的長程窄體客機（僅 100-135 座位），而 A220-300 則可服務 130-160 座位市場，這款客機將允許航空業者進行洲際飛行，且還能有獲利空間。

肆、心得與建議

1. 心得

(1) 因環保意識抬頭，特定國家如瑞典竟出現短程拒搭飛機的公民運動，輿論壓力與公民意識衝擊當地航空產業，短程航線座位數供給出現下降，對於低成本航空業者衝擊最大。反觀富裕人口越來越多的亞洲市場，尤其是對於不斷增加的中產階級族群，航空旅行仍具有極大吸引力，跨國旅行的負擔能力也提高，且亞洲地區與歐洲地理條件迥異，較少有跨國地面運輸的選擇，故亞太區航空旅遊市場仍有極大成長機會

(2) 大數據的發展困境：大部份的機場當局與航空業者的資訊交換並不普遍，機場當於與航空業者若能合作資訊交換，將有助於機場營運效率與旅客滿意，亦有助於航空公司提供旅客服務。

(3) 可飛更遠航程（6000-8000 公里）的窄體客機機型問世：目前嘗試購買寬體或窄體長程客機多以低成本航空業者為主，新航太科技讓窄體客機越飛越遠，將會衍生全新商業模式，創造全新航網布局。根據 CAPA 調查，全球窄體客機訂單仍超過一半集中在亞洲地區。CAPA 研究預測，未來 A321XLR（航程在 8770 公里以內）等類似新型態長程窄體客機（其他包括

A220、A321LR、波音 MAX 等)將可能創造主流,類似過去 A380 或 777 所帶給全球航空產業版圖帶來的影響,研究預測未來可能因為新型態窄體長程客機的出現,伴隨傳統航空樞紐多半出現容量不足問題,較小型的樞紐機場將可能崛起。

(4) 機場基礎限制始終是一個全球共通議題,特別在亞洲,迫使航空公司在部分市場中開始將服務能量移轉至二線城市。菲律賓馬尼拉、印尼及越南此刻都正面臨機場容量不足的議題,甚至連曼谷兩座機場都面臨飽和,開始評估興建第三座新機場的可能性。在新航站與停機坪啟用之前,機場方也希望能透過智慧化監測掌握航機動態資訊,例如航機準點率,以有效提升航機在機坪使用的效率。

二、建議事項

(1) 持續關注 Flight Shaming 議題:先進已開發國家的航空事業決不對自外於追求永續、節能及環保政策,我國航空事業雖然位處於航空需求動能強勁的亞太地區,但仍須逐步導入節能、永續政策,有效控管航空器排放量,或可透過政策及收費制度誘導激勵航空業者朝綠色環保之路邁進。

(2) 激勵方案:除了可用以激勵新航線航點通航之外,激勵政策

亦可用於鼓勵業者響應各式重大發展方針，包括提高停機坪周轉率與航班準點率，降低航班延誤等亦可透過激勵政策或差別訂價提高誘因，亦建議可持續蒐集亞洲及歐、美國際標竿機場獎勵計畫內容，適時調整方案內容及適用對象標準，以達到最大效益。

(3) 持續滾動檢討機場主計畫之機場基礎設施規格，以符合新世代長程窄體客機發展趨勢，掌握未來發展機會，降低資源投資浪費，提高機場土地使用效率。