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DYNASTIC SHIFT GATHERS PACE AT KOREAN AIR

President and COO, Walter Cho, says the bruising years have passed at the carrier as political tensions ease

Orient aviation 25 YEARS

Airline MRO industry unprepared for cyber attacks

Region's carriers predict bumps along the profit road in 2019

Global air passenger growth continues to shift east

INDUSTRY INSIGHT REPORT

OEMs build dominance in the MRO hangar of the future

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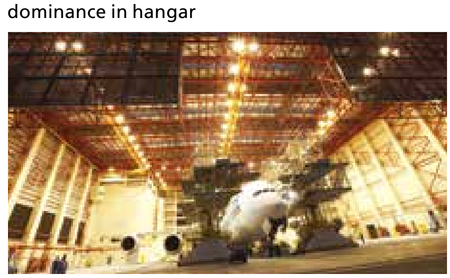

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Fighting creeping protectionism

When airline leaders met on South Korea's Jeju Island for their 62nd Assembly of Presidents of the Association of Asia Pacific Airlines (AAPA) last month, they universally agreed air traffic growth was robust but that business continues to be tough.

Yields are declining and profitability is volatile for many carriers in the region. Fuel cost increases is an issue for the industry as is the U.S./Sino tariff war, perennial infrastructure shortfalls and the technology investment essential for adaption to the digital world.

Despite these challenges, the region's airline leaders would have been buoyed by the new 20-year International Air Transport Association (IATA) forecast which put the region front and centre of global growth.

To 2037, IATA said, the world's air traffic would double to 8.2 billion passengers a year and more than half of them would be originating from the Asia-Pacific. The forecast bears out the need for the huge numbers of new aircraft that have been ordered by the region's airlines for delivery in the coming decade.

But there are riders to the positive forecast. Despite the billions of dollars being invested in infrastructure today, it continues to fall behind in accommodating such huge air traffic growth.

IATA director general and CEO, Alexandre de Juniac, frequently points out that airlines could order as many planes as they want, but if airports, runways, terminals and air traffic management systems cannot process their traffic, those airplanes won't be utilized to their full advantage.

An additional barrier to growth, de Juniac said, was "forces of economic protectionism that are casting a shadow over world trade". If the world proceeded towards "reverse globalization" he said, passenger numbers would still grow, but at an annual rate of 2.4% rather than 3.5%. But if globalization wins and the global economy continues opening borders to people and trade, growth could actually reach 5.5% annually.

Clearly, the industry would prefer the latter. To achieve this goal it will require all airlines, both individually and through trade associations such as IATA and AAPA, to renew their focus on lobbying governments and other relevant authorities to raise investment in infrastructure.

It has to be done now as building terminals and runways are five to ten year projects. Airlines must also redouble their efforts to turn these same authorities away from creeping protectionism that is threatening to put the brakes on the growth of aviation. ■

TOM BALLANTYNE
Chief Correspondent
Orient Aviation Media Group


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King Power faces unknown future after founder's death

Pundits in Thailand are speculating the adult children of recently deceased King Power billionaire, **Vichai Srivaddhanaprabha**, might not have the diplomatic chutzpah to negotiate renewal of the exclusive licences of the duty free chain that are the backbone of the family empire.

Vichai died alongside his pilot and three other passengers when his helicopter crashed after take-off on October 28. Vichai and his fellow passengers had just left the Leicester City football stadium after watching his local team play its weekend fixture.

Vichai is survived by his wife, two sons and two daughters. Younger son, Aiyawatt (Top),

32, is the vice chairman of the Leicester City Football Club with the added dash of being an accomplished polo player. His father's equine interests extended to 60 racehorses stabled at the family estate outside London.

Two of King Power's airport duty free monopoly licences are up for renewal at the country's two biggest airports, Survarnabhumi and Don Meaung, in the next two years.

Airports of Thailand granted King Power exclusive rights to duty free shopping in Thailand when prime minister Thaksin Shinawatra was in power. The two men became close, but Vichai is reported to have distanced himself from the exiled politician in recent years.

"King Power's most important business is based on a monopolistic concessionary right granted by the government," said Thammasat Business School academic, Pavida Pananond, the AFP news agency reported last month."That suggests the political nature of the business and Khun Vichai's political and business clout."

The King Power tycoon opened his first duty free shop in Bangkok in 1989. Later on he befriended then prime minister Thaksin and subsequently was granted monopoly duty free retail rights when the Suvarnabhumi airport opened in Bangkok. His estate is reported to be worth US$5 billion.

In a 2014 interview with Thai media, Vichai said: "No business person sits around and waits for others to give them concessions." It is yet to be seen whether the Vichai heirs have learnt that lesson at their father's knee. ■

Asia tops table for air passenger growth to 2037

Routes to, from and within the Asia-Pacific will accommodate an additional 2.35 billion passengers a year by 2037, reports the **International Air Transport Association** in its latest 20-year air passenger forecast.

The forecast expansion will increase the region's global share of air traffic to 3.9 billion passengers, producing average growth of 4.8%, the highest in the world.

- China will be flying 1.6 billion passengers a year in two decades compared with one billion in 2017.
- Indian airlines will have added 414 million passengers to their books in 2037 bringing total passengers to 572 million in that year.
- Indonesia will become the fourth largest airline market in the world from its current 10th position on the global table by expanding from 132 million passengers last year to 411 million a year in 2037.
- Thailand will have 214 million passengers a year in two decades compared with 98 million to last December 31. (*Passenger growth moves East, page 18.*) ■

Juneyao Airlines going long-haul to Helsinki without Star

The Juneyao Group airline subsidiary told **Orient Aviation** last month that its maiden intercontinental route would be a daily Shanghai Pudong-Helsinki Vantaa B787-9 Dreamliner service to be launched next June in direct competition with **Finnair. Juneyao Airlines** also told Orient Aviation it had converted its five B787 options to firm orders. The airline now has 10 B787s on its order book.

Juneyao, a private carrier, took delivery of its first Dreamliner in October. The airline is flying it twice daily on its Shanghai Hongqiao-Shenzhen trunk route. Before it commences flights to Finland next year, the aircraft will be rostered on "regional routes, such as Singapore and Japan, in early 2019", it said.

Juneyao will receive three B787s in 2018 and two in 2019, which will increase its international capacity by 9.2% and 4.4%, respectively. The remaining five airplanes will follow in 2020 and 2021. The airline has installed 29 **Thompson Aero Seating Vantage XL** lie-flat seats in business class and **293 Recaro Aircraft Seating CL3710** recliners in economy class. Juneyao has a regional fleet of 41 A320s and 27 A321s.

Last year, Juneyao became the first, and to date, the only carrier to join Star Alliance's Connecting Partner Model. It was believed Juneyao's first B787 intercontinental flights would feed into the Star hubs at Frankfurt, San Francisco and Vancouver but certainly not Helsinki.

Then again, Juneyao's allegiance to Star Alliance could be shifting. In July, Juneyao and its parent invested US$1.9 billion for an approximate 5%

shareholding in state-controlled **China Eastern Airlines**, a SkyTeam member. The "strategic investment" will allow the two Shanghai-based carriers to tighten their grip in the Yangtze River Delta where combined they have a market share exceeding 50%. ***By Dominic Lalk.*** ■

New Istanbul Airport threatens Gulf hubs

By Dominic Lalk in Istanbul

"Welcome to the biggest and best airport in the world," IGA CEO, Kadri Samsunlu, said when he welcomed global media to the Turkey's Istanbul Airport last month.

IGA, a Turkish consortium under state control and the third largest asset holder in the country, was awarded the contract for the US$10.5 billion construction of the 25-year operation in 2013.

Building began in 2015 with the goal of making the 200 million passenger airport "strong competition" for the Gulf connector hubs that link the Asia-Pacific to Europe, Africa and the Americas.

Istanbul Airport – it has dropped the "new" – had its soft opening on October 29. Initially, Turkish Airlines will operate a daily flight to Ankara, Antalya, Izmir, Ercan and Baku from the new facility. From December 29, the Star Alliance carrier will move its 330 passenger and cargo aircraft from Ataturk Airport to its new airport home in readiness for full operations on January 1, next year.

Istanbul Airport is an unprecedented airport project. It is larger than Beijing's Daxing Airport and will have triple the capacity of the obsolete Ataturk Airport.

In the opening phase of operations, the new gateway will operate two runways of 4,100 metres and 3,750 metres, respectively. IGA hopes to have a third runway in service by early 2021 which will lift aircraft movements to 135 an hour.

Samsunlu said last month that a fourth runway would be ready "around 2022" with a fifth and sixth planned for completion by 2028.

All six runways will have CAT-III instrument landing approaches and will be operated in parallel to allow independent take-offs and landings at the same time. IGA said the new airport is the first in Europe to have an end-around runway.

The airport has 114 gates, including 15 that are suitable for the A380, as well as 257 remote parking positions. Ataturk had 146.

"Cargo is important. With a cargo capacity of 4.5 million tonnes annually at the new airport, we will very soon be in competition with the likes of Hong Kong," the IGA CEO said.

"We have the capacity to handle 30 cargo plans at a time. I am sure Turkish Airlines will soon make announcements on that front," he told Orient Aviation exclusively.

IGA emphasized the strong focus it is placing on security at the new airport. Nine thousand security cameras have been installed at the airport and perimeter fences are fitted with fibre optic sensors.

The building of Istanbul airport has been controversial. It is alleged 400 workers have died during the project's construction and that more than 30 remain in jail after protesting about working conditions on the airport site.

Samsunlu said: "We are facing challenges, but it's normal. We are fixing the problems and are open to peaceful demands. Some things were not right and I took responsibility and action to fix them.

"Things are fine now. It was totally, totally untrue that 400 workers had lost their lives. It is up to the government to decide what happens next."

Turkish Airlines will have the biggest presence at the airport after being stymied in its expansion plans by Ataturk's capacity limitations. The situation forced the carrier to defer deliveries of new aircraft.

Turkish Airlines CEO, Bilai Eksi, has identified China and India as the carrier's most important future markets. "Our main market is India, the second market is China and the third is Canada," he said.

Turkish plans to recruit more Chinese and Indian partners before it opens more routes. "We are looking for traffic rights to India, China and Canada and we hope we will get more traffic rights," Eksi said.

Turkish has traffic rights to Beijing, Guangzhou and Shanghai. It serves Taipei daily and Hong Kong six times a week. It has a long haul fleet of 33 B777-300ERs and 62 A330s. It has ordered 25 A350-900s with five options and 25 B787-9s also with five options. ■

First casualty of Trump's trade war?

By chief correspondent, Tom Ballantyne, in Jeju, South Korea

While Boeing Commercial Aircraft vice president marketing, Randy Tinseth, was briefing media on the sidelines of the Association of Asia-Pacific Airlines (AAPA) Assembly of Presidents in Jeju last month, word spread fast that an exclusive operator of Boeing aircraft, Xiamen Airlines, was talking to Airbus about potential orders.

At press time there was no news of a change of airframe manufacturer at the Fujian province carrier nor had tariffs been imposed on U.S. jets by China. But the rumour crystalized a fear that U.S. President Donald Trump's intensifying trade war with Beijing could encourage Chinese airlines to turn to Airbus for more of the huge number of aircraft they will need to accommodate forecast passenger demand.

Tinseth said in Jeju: "We're in that place where we're talking to both sides. We're telling our story of fair and free trade and how important that is. We're working closely with our customers and continue to deliver a lot of airplanes to our Chinese customers."

Boeing forecasts the Chinese market will need 7,600 new aircraft, at a value of US$1.2 trillion, in the next two decades. Mainland airlines accounted for about 13% of the U. S. manufacturer's revenue last year. It also is the company's largest market for the B737, Boeing Commercial Airplanes' biggest source of profit. In 2017, Boeing delivered 202 aircraft to Chinese airlines, compared with 176 by Airbus.

In December, Boeing's joint venture Zhoushan completion centre will open on schedule. It is the aircraft manufacturer's first such facility outside the U.S and has been developed with the state-owned Commercial Aircraft Corp. of China Ltd. It will employ local workers to paint and finish the interiors of single-aisle B737s. "We're opening that in December. That has not changed," said Tinseth.

Elsewhere, Boeing is pushing ahead with its latest wide-body,

the B777X. It has sold 340 of the aircraft, including 21 to Cathay Pacific Airways and 20 each to All Nippon Airways and Singapore Airlines.

"The B777-300ER has become the best-selling version of the B777. It came to market in 2004. That plane will commence its replacement cycle early next decade. That is when we are going to be in a really good place and where it is going to be really good news for the 777X," said Tinseth.

Work is continuing on the development of a mid-market aircraft (NMA), which will require board approval. "A decision is expected sometime next year. It's not only about what your customers want. You have to identify the right airplane configuration and accurate development costs. Even more importantly, it must be a viable product with costs below the price," he said.

Tinseth questioned reports Airbus would beat the NMA to the market with it's an ultra-long-range A321. He said the A321 is a great airplane - Airbus has sold about 1900 of the type – but the long range version is a niche market.

"You pay a dear cost. When you add take-off weight a cost is associated with that and I think it means it will continue be a niche market [for the aircraft]. The mid-market plane is longer range and bigger. It is not a single-aisle airplane nor is it a wide-body airplane. It's something in between. Again, we are working for a different opportunity which is something you can't address today."

Tinseth said Boeing believed the MAX 10 was the competitor to the A321. They are essentially the same size. "It has the ability to fly on any route an NG does today and has great economics. It's a stretch so the economics are compelling. We launched it a little over a year ago and we've sold 500 plus of these units. So, we are doing OK."

As for the growing number of ultra-long-haul services being inaugurated by airlines, including Singapore Airlines' recent launch to New York with an Airbus A350, Tinseth said: "They could do it in our aircraft and make more money."

"You can always trade payload for range. There's nothing magic. You can take a B787-9, configure it in the same way and have 5% lower trip costs. The plane is lighter and more fuel efficient.

"You have to dedicate yourself to a special configuration that has costs associated with it. Ultra-long haul works when you can take an airplane in standard configuration and make it work with a full load. It also is important that you have a strong business class mix. SIA has to have three aircraft – worth approximately $600 million - dedicated to a single route on long range flights where the percentage of fuel to costs is greater." ■

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BUMPS AHEAD IF TRADE WAR ESCALATES

When the region's airline leaders gathered for the Association of Asia-Pacific Airlines Assembly of Presidents last month, they reported flying was thriving, but warned the year ahead held perils from higher fuel prices and trade wars to continuing infrastructure constraints.

Chief correspondent, Tom Ballantyne, reports from Jeju, South Korea

So far in 2018, business at Asia-Pacific airlines has been in rude health. Despite pressure on margins from rising fuel costs and currency fluctuations, the region's carriers are forecast to deliver substantial profits for the fourth consecutive 12 months to December 31.

Yet when airline leaders met on the South Korean island of Jeju for their 62nd Assembly of Presidents last month, it was felt the Sino/U.S. tariff war could dent consumer confidence and reduce cargo demand, critical to the operations and profitability of many Asia-Pacific airlines. Asian carriers shift more than one third of global air freight volumes.

International air cargo demand has increased this year, but has moderated from the surge of 2017, said Association of Asia Pacific Airlines director general, Andrew Herdman, at the Jeju gathering.

His sentiments were echoed by two of the region's largest air freight operators, Cathay Pacific Airways and Korean Airlines (KAL). "I think for the rest of this year it looks like (cargo) demand will be quite strong. Going into next year, obviously the future is unknown and there is a bit of uncertainty about it. There could be some bumps ahead," Cathay Pacific CEO, Rupert Hogg said.

Korean Air (KAL) president and chief operating officer, Walter Cho, agreed. "This year the cargo market was

relatively very strong, but I have a lot of concerns about next year's market. It is still unknown and we are hoping for a better resolution between the two countries in conflict right now about this. Hopefully, they get to thinking in terms of consumers instead of ego."

"Ultimately, trade wars are not good for trade and they're not good for transportation, including air cargo so we would hope for resolution," Herdman added. He said the International Monetary Fund (IMF) meeting in Bali in October had eased back its economic growth forecast from 3.9% to 3.7%.

Rising fuel costs are a second area of major concern for the industry. Herdman said year-on-year, the price of fuel has increased by about 40%, but from significant lows. "This is a big change and is that change being reflected in fares? It is one of the key pressures on airlines. The angle of growth of the average fuel price is steeper than airfares are recovering. Although air fares are rising they are still very affordable and the rate is below what it has been for the last 10 years," said Herdman.

"Even though oil prices are rising air fares are having to edge upwards and they are feeling the squeeze in terms of margins while consumers are still getting the benefits of very affordable air fares.

"The industry is thriving in traffic terms but airlines must decide how much of the increase in fuel costs will be passed on to average fares and freight rates. Some people are afraid that higher oil prices and higher air fares will soften growth enthusiasm. But we saw that even when oil prices were way up in the $120 range people still travelled and growth still continued."

Low-cost carrier expansion across the region also was an issue for discussion at the Assembly. Herdman said the key take away was that the full-service model is capturing 75% to 80% of the traffic, 80% of the revenues and the lion's share of the profits.

"But these distinctions are blurred as LCCs go international, medium and long haul and also adopt some of the practices of network optimization and co-operation from full-service airlines. At the same time, full-service carriers are moving towards an LCC model in the back of the plane in terms of base fares, unbundling and so on," said Herdman.

In an a panel session, Singapore Airlines (SIA) CEO, Goh Choon Phong, said change is a constant in the industry and some changes challenge an airline's business model and the way they serve their customers.

He said LCC penetration in Southeast Asia was in excess of 50%. "That's huge and among the highest in the world. It all happened in the last 15 or 20 years. It changes the way consumers in our part of the world travel. With a trend like that, the question is 'what do we have to do?'," he said.

"I appreciate airlines in different countries will look at this in different ways. SIA has had to challenge the model we have operated for the last 60 or 70 years to participate in this growth. The outcome is we chose to embrace and create our own LCC to meet the demand of this new consumer trend and to be able to participate."

Goh said that before the group launched its medium to long haul budget carrier, Scoot, SIA operated to a dozen destinations in China. Today, in co-operation with Scoot, which has now merged with Tigerair, the group flies to 29 Mainland cities from Singapore.

"That's not small. We also operate 14 points to India.

Cockpit culture must change to address gender diversity

In 2018, approximately three percent of the world's pilots are female. An Assembly resolution called on governments to support the International Civil Aviation Organization's (ICAO) New Generation of Aviation Professionals (NGAP) initiative by partnering with the aviation industry to invest in the education and training of future aviation professionals.

"The association also calls on governments and other aviation stakeholders to promote best practices in human resource development including a renewed commitment to the further diversification of the workforce and gender equality," a 2018 Association of Asia-Pacific Airlines (AAPA) Assembly of Presidents resolution said.

Support should include expansion of teaching science, technology, engineering and mathematics (STEM) in schools to the introduction of flexible rosters that allowed aviation professionals to keep working when their personal circumstances changed, its member signatories said.

AAPA director general, Andrew Herdman, said workplace diversity and gender equality were topics of active discussion within the AAPA and the industry more broadly. "We are driven from an operational culture. We have to adjust accordingly," he said. "Still run the operation, but try to introduce a degree of flexibility [into the systems] because different people have different requirements. There are many, many opportunities ahead in this industry and it's important this is well publicized. It's a challenge and it needs more than talk."


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We could only do so because we are able to employ the LCC to points that would not have been viable with the full-service model. We think this portfolio approach gives us the flexibility to quickly adapt the right model to the right markets."

As always, shortfalls in the construction of runways, terminals and air traffic management to cope with the region's growth attracted analysis. "Air transport is widely recognized as a key contributor to economic and social development, built around strong global networks offering both passenger and air cargo services. The dynamic airline sector epitomizes the way in which the region's carriers are at the forefront of global air transport industry development," said Herdman. "Working together as a community, AAPA is determined to tackle the numerous challenges that face the industry." ■

The beating heart of the region's airline issues

The Association of Asia-Pacific Airlines (AAPA) 62nd Assembly of Presidents strengthened the resolve of its members to be a strong voice in shaping global industry perspectives on safety, emissions reduction progress, expansion of infrastructure and airline passenger rights.

Its members also recognized in their assembly resolutions the new challenges of recruiting and training sufficient engineers and pilots to crew and maintain their expanding fleets and the social obligation to go beyond traditional parameters to assist in combating wildlife trafficking.

AIRLINE SAFETY

Safety performance can be enhanced with the implementation of the International Civil Aviation Organisation (ICAO) Annex 19 "Safety Management". AAPA urged governments and industry to establish regional and national safety teams, support voluntary reporting of safety incidents and events and establish mutual trust based on "Just Culture" principles.

EMISSIONS REDUCTIONS

AAPA leaders urged governments and airlines to work together to ensure the effective implementation of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)) and refrain from the introduction of duplicate requirements on international aviation CO2 emissions.

The AAPA encouraged the ICAO Council to finalize its guidance on the CORSIA Emissions Unit Criteria so airlines could have broad access to recognized carbon offsets.

AIRPORT INFRASTRUCTURE

Governments should ensure regulatory frameworks for airport infrastructure investment are fit for purpose and properly balance the interests of airlines, passengers and airport operators.They also should adhere to the principles of non-discrimination and transparency of user charges in line with ICAO guidance.

PASSENGER RIGHTS

The air transport industry is extremely complicated with governments, regulatory agencies, airlines, infrastructure operators and other service providers working closely to ensure coherent systems operations.

Many governments have introduced, or are proposing to introduce, aviation specific consumer protection regimes. These actions can be uncoordinated and inconsistent with existing international treaties and can confuse consumers. They also result in operational difficulties for airlines. The AAPA assembly asks governments to ensure mandated regulations for consumer protection are non-prescriptive, practical and cost-effective.

AVIATION MANPOWER

ICAO has forecast the aviation sector will require 620,000 pilots, 1.3 million aircraft maintenance personnel and 125,000 air traffic controllers in the next 20 years. AAPA asked governments to support ICAO's plan for more education and aviation training and stressed the airline industry's commitment to improving workplace diversity in the industry.

WILDLIFE TRAFFICKING

The illegal trade in wildlife and wildlife products increasingly threatens the survival of endangered species. Criminal syndicates are exploiting the connectivity of the air transport industry to traffic wildlife and wildlife products worldwide.

Airlines recognize that by collaborating with governments, law enforcement agencies, airports and freight forwarders they can help contain this multi-billion dollar global industry, but said governments must increase their investments in manpower and technology if the fight against illegal animal trafficking is to be won. ■

Global air passenger growth moves east reports IATA

The global airline industry's latest forecast underscored the fact that the powerhouse of aviation is moving east. It also highlighted the much repeated need for aviation infrastructure to keep pace with airline growth. Chief correspondent, Tom Ballantyne, reports.

It is what we all knew. Global air traffic will double to 8.2 billion annual travelers by 2037 and at least half of those additional 4.1 billion passengers will be flying in the Asia-Pacific, the International Air Transport Association (IATA) director general, Alexandre de Juniac, said in the association's forecast last month.

Highlights of IATA's latest 20-year air passenger forecast include the news that China will displace the United States as the world's largest aviation market in the mid-2020s. India will take third place on the world table after the U.S. when it overtakes Britain in 2024.

Indonesia will be a standout performer in the next decade, climbing from No. 10 on the industry table in 2017 to the fourth largest commercial airline market in the world by 2030. Thailand is expected to become one of the top 10 markets in 2030, replacing Italy which will drop out of the rankings.

Despite the big numbers, IATA's de Juniac said while strong demand for air transport is good news, the connection between strong demand and profitability is not always assured. "Often, our ability to meet the needs of consumers and businesses is limited by the failure of governments to provide the infrastructure capacity required,"

he said, and added the pressure on infrastructure to meet the demand is not likely to end soon.

The latest air traffic figures, for August, reveal that for the 31-day period airlines hit an all-time record load factor of 85.3%. Countering the high capacity record, de Juniac said the numbers in its new forecast were based on a constant policy scenario although there was much uncertainty about the direction of global politics and its impact on aviation.

"The forces of economic protectionism are casting a shadow over world trade and if the world proceeds towards this reverse globalization, passenger numbers will still grow but more slowly, initially by 2.4% annually instead of 3.5%," he said.

"The future will be brighter if globalization wins and we see continuous liberalization and the opening of borders to people and trade. In that case, we see the potential for 5.5% average annual growth instead of the 3.5% in our reference scenario."

IATA said a doubling of air passengers in the next 20 years could support 100 million jobs globally. No matter which growth scenario comes to pass, de Juniac said, aviation continues to face an infrastructure crisis.

"Governments must work closely with the industry, to be more ambitious in developing efficient infrastructure that is fit for purpose and offers value for money. The world stands to benefit greatly from better connectivity," he said.

"However, at this rate, airports and air traffic control will not be able to handle demand. Governments and infrastructure operators must strategically plan for the future. Decisions made now will have an impact on the value created by aviation for their regions.

"Global prosperity depends on air connectivity. Aviation is sensitive to policies that either support or undermine growth. And these seem to be pointing in the wrong direction. Dampening demand for air connectivity risks high quality jobs and economic activity dependent on global mobility.

"This forecast is a cautionary warning to governments. First, the industry will grow but they must clear the infrastructure bottlenecks to bring that growth to their home markets. Secondly, governments must understand globalization has made our world more socially and economically prosperous. Inhibiting globalization with protectionism will see opportunities lost." ■

A STEADYING HAND AT KOREAN AIR

Fierce competition and rising fuel costs are the most recent challenges to confront Korean Air (KAL). Strained relations with China blighted its Mainland business in the recent past and political rancour has plagued the Korean Peninsula for decades. But KAL president and COO, Walter Cho, said last month that easing regional and geopolitical tensions will shape a more profitable KAL.

Chief correspondent, Tom Ballantyne, reports from Jeju

Obviously, for Korean Air (KAL) president and chief operating officer, Walter Cho, the détente between his country and its northern neighbor is a welcome turn of events. For the last two years, North Korea has launched several ballistic missiles into the skies over the Sea of Japan and it has been very bad for Korean Air's (KAL) business.

Today, an apparent new phase in positive relations has begun on the divided peninsula while globally de-nuclearisation is on the agenda for discussions between the U.S. and North Korea.

"When tensions were at their peak, interest in Korea because of the tension and not the country itself resulted in people avoiding it. It was a very critical situation for the [Winter] Olympics. Fortunately, it became very calm. It is going in the right direction. If everything turns out well we will have a very big opportunity in North Korea," Cho said in Jeju at the Association of Asia-Pacific Airlines Assembly of Presidents last month.

It will be an opportunity that will be some time coming. KAL will not launch flights to North Korea's capital, Pyongyang, anytime soon. But a permanent thaw in north-south relations is possible, Cho said in Jeju.

"I don't really want to go too deeply into politics, but as a Korean citizen I would hope for peace. I believe the way the government is doing it, there is a very good chance," he said.

But he warned the opportunities for the carrier in North Korea will be in the longer term. "The infrastructure is not there [in North Korea]. The market is not there. It will be a long shot, but once the political situation improves, hopefully there will be some traffic generated from North Korea and we will take a shot at it," he said.

He said there have been talks about allowing KAL to overfly North Korea, an option not available to the South Korean flag carrier at present. "We have been discussing it internally. It would save a lot of cost for us. But we have to be very careful about this possible change because of U.S. sanctions. There is no time line," Cho said.

Tensions with its northern neighbor have not been the only setback to KAL's business. Last year, China banned its citizens from participating in package tours to South Korea as a result of the deployment of a U.S. missile defence system, THAAD, in the country. The ruling savaged tourism in a major KAL market.

By November last year, the impact of the ban was made clear. KAL reported a 22.7% decline in operating profit for its third quarter, with earnings from Chinese flights plummeting 19%. Japan exacerbated the problem with an 11% fall off in passengers on South Korea-Japan routes.

Shrugging off the decline, KAL reported a record net profit of $798.2 million for the full 2017 year, despite operating profit dropping 11.4%,to $840.6 million. Tickets sales improved because of an increase in passenger traffic from destinations beyond China and Japan.

"Overall our performance on the carried passenger list was good. The growth was constrained by political instability in the region, especially between South and North Korea and the U.S., which significantly affected our results," Cho said.

"This year the market from South Korea to the U.S. and Europe was very good. We are [still] struggling with China due to these political issues, but Japan is slowly and steadily regaining momentum. At this time, we are doing much better than last year."

> "The LCC sector is growing extremely fast. They are taking market share in Korea and on international and regional routes in Asia. We are very aware of this and formed our own LCC, Jin Air, about 10 years ago. It is doing extremely well, outperforming KAL dollar for dollar. We protect ourselves and that acts as a barrier between KAL and other LCC competition"
>
> **Walter Cho**
> Korean Air president and chief operating officer

KAL is proceeding through a fleet development exercise, in particular for its wide bodies, with initial decisions on fleet renewal expected to be made next year. KAL operates 175 aircraft: eight A220-300s (formerly the Bombardier C Series) with two more to come, eight A330-200s, 21 A330-300s, 10 A380s, 11 B737-800s, 16 B737-900s, six B737-900ERs, three B747-400s, 10 B747-8s, 14 B777-200ERs, four B777-300s, 24 B777-300ERs and eight B787-9s with two more to come. On order, for delivery from 2019, are 30 A321neo and 30 B737 MAX 8s.

Its freighter fleet is four B747-400Fs, seven B747-8Fs and 12 B777Fs. Business jets make up 16.7% of the group's aircraft stable.

Cho said KAL's market has grown significantly, particularly across the Pacific to the U.S. and Canada, which meant the airline sees a need for larger wide bodies for both trans-Pacific and intra-Asia routes.

KAL is unique in that it operates wide bodies on very short routes, including Seoul Gimpo to Jeju Island, the world's busiest domestic route at 13.2 million passengers – and growing – in 2017.

"I am very pleased with our fleet of Airbus and Boeing planes, but they are starting to show their age. We have to look for replacements. We operate wide bodies that other airlines use for long-haul, but we have a lot of need for them," said Cho.

"We do not have anything I can share now, but we are in the process [of making fleet decisions] We might make a decision next year." On Cho's radar are the B777X, the A350 and more B787s.

> As well as operating short-haul, it has been flying a B777-200ER long-haul to Honolulu. It has been operating to Hawaii with very big success. We have been asked for more of that aircraft, so it is a possibility we will utilize Jin Air to compete in that long-haul budget market. Jin is actually looking into expanding the long-hauls. We could extend it to some European cities or the U.S. where traffic rights are not a constraint

"Since we have B787s there is a very high possibility we will expand our B787 fleet. The 777X is coming up and it would be a good replacement for our B777 older generation planes but we are keeping the A350 in mind as well."

Asked why KAL decided to order Boeing and Airbus narrow-bodies, Cho said the airline had looked at every available option. "We took the best of each. The A321neo has great potential for longer range routes compared with the B737s," he said.

"It has a wider cabin and is more comfort orientated. The economics outperform anything in its class. It may be seen as not making sense to take both of them. For us, growing our fleet as well as having the need for usage for Jin Air, KAL's wholly-owned LCC cost subsidiary, I believe made a case for the decision.

"We don't have any problems or issues with both of them. The neo will have more than 200 seats, the MAX around 170 and the A220 128. They are all in different categories. different classes."

Cho made it clear in Jeju there would be no rush to launch multiple routes. "We have more than 80 international destinations, but we have many we do not serve daily. My first aim is to make everything daily before we expand too much. At press time, the carrier announced several route changes.

"I want to increase frequencies rather than add routes. Boston will be one of our very few opportunities as a destination. I see very strong potential in Boston, but also I would like to put more flights into San Francisco, Los Angeles and New York in the very near future, hopefully with B787 size aircraft."

The South Korean leisure market is expanding into Eastern Europe and northern Scandinavia countries that were non-existent on KAL's route map a decade ago. "Koreans travel all over the world now. They are looking at places we had not focused on. There are a lot of destinations we could develop, but as a business traveler I would like all my destinations be daily flights," Cho said.

"Firstly, it is critical for the business traveler to have a satisfactory global network. Secondly it is important to have at least one flight a day back home."

Conversely, Cho is looking ahead of immediate demand for frequency to European and Asian expansion. "The problem is open skies. We don't have open skies with Europe and we don't have open skies with a lot of countries in Asia so it is not possible right now. But we see a lot of opportunities," he said.

KAL wants to develop more joint ventures or co-operative agreements with partner airlines. A major joint venture with SkyTeam alliance partner, Delta Airlines, has been in place for more than six months. Cho said it was working extremely well.

"The number of transit passengers [from Delta] in our terminal at Incheon has grown quite significantly, to 300 plus passengers a day. We continue to expand as our flights to Boston have been launched along with Minneapolis. We have to grow our capacity every year so transit passengers will grow it further," he said.

"We are seeing so many benefits from the Delta JV, including its marketing power in the U.S. and our marketing power in South Korea and Asia. Together, it brings so much to us, much greater than I was expecting, both in profit, numbers and transit passengers."

Future JVs will not be as "tight" as the one with Delta, Cho said, but they could involve closer co-operation. He would like to complete a deep JV with a Chinese airline; an impossibility for now because South Korea and China do not have an open skies agreement. However, KAL can co-operate with SkyTeam members that include China Eastern, China Southern and Xiamen Airlines.

Another major issue for Cho to manage is the rapid LCC market take-up in its home territory. Six South Korean budget carriers hold 40% Soth Korea's domestic airline market. KAL has decided to remain focused on its full-service offering and is meeting the challenge with its LCC subsidiary, Jin Air.

Jin Air is the country's second largest budget airline, but it has not been without its problems. Earlier this year, South Korea's Ministry of Land, Infrastructure and Transport held hearings to determine if the airline's licence should be cancelled because of allegations of abuse of power.

Accusers had discovered that the younger daughter of KAL chairman, Cho Yang-ho, had been a board member of the carrier from 2010-2016. Cho Hyun-min, or Emily Cho, is an Hawaiian-born U.S. citizen. South Korean law stipulates non-Koreans cannot hold a post on the board of a domestic or international logistics company. In August, the Ministry decided against revocation of the Jin Air's licence, but placed restrictions on new routes, new aircraft registration and non-scheduled flights.

Cho said: "Hopefully, we will reach an understanding of each other. We hope to solve the matter before it effects Jin Air's expansion. This is an important issue because Jin has aggressive growth plans."

In Jeju, Cho declined to comment on the negative publicity the airline had received from the "nut rage" episode between another of his sisters, Heather Cho, and a KAL flight attendant or the recent news that his father and KAL group chairman, Cho Yang-ho, had been indicted on charges including embezzlement and breach of trust by South Korean prosecutors.

Asked what was being done to keep the airline brand strong in the light of such scandals, Cho said: "I believe our brand and our reputation starts with our employees. I am trying to communicate more with them. Make sure they are happy working for us and with us and make sure the product is there. I think happy employees generate more happy customers."

Preparing for impact of global trade tensions

KAL is one of the region's largest cargo carriers and the sector is a significant contributor to the carrier's revenue. Like other airlines in the region, it is concerned about escalating Sino/U.S. trade tensions.

"In 2017, the cargo market was quite strong and relatively, in 2018, it grew but at a slower pace. But it still grew. But the trade tensions in the world will have some effects. We don't see it yet. I see the constraints coming up in a very short time. However, we are preparing for it.

"Anything from the U.S. to China and vice versa is going to be affected. We are looking at alternative markets to China and to U.S," said Cho.

Unlike several of its competitors, KAL has refused to introduce a premium economy cabin on its aircraft. Cho believed KAL's economy class is very close to other airlines' premium economy product. "We have good pitch in economy and to introduce premium economy we would have to reduce our economy pitch. Maybe we'll just make our entire economy cabin premium," he said.

KAL's A380s have the lowest seat count of the type across the world. "We launched the A380 with 407 seats. I believe it is still the lowest seat count in the industry. We have just under 300 economy seats on the A380. If we put in premium economy it would go down to 200. That would make the total count 350 or 370 seats and it would affect us. It will be very difficult to make a profit out of it," he said.

Cho said customer service starts with a product." It always starts with economy class. We always advertise our great product in First and Business class, but what really matters in general is the onboard service. It's not a case of the food or the smiles of flight attendants. It is the seat that is most critical. We need to give passengers something that's bearable for 14 hours of flight. Some of our long hauls go more than 10 hours. I'm a very tall guy. If I cannot fit into the seat we don't put it in," he said.

KAL has lost a lot of pilots to competing airlines, particularly in China. "We don't see it as much as we did a few years ago. But it still is an issue, although low-cost carriers are a bigger issue than China now," he said. "I received an email yesterday that two of our pilots had resigned. One to China and one to a low-cost carrier in Korea."

"KAL encourages gender equality but "unfortunately we see a very small number of female pilots in our fleet, but we always welcome them", he said. The bigger concern KAL and other airlines have is the shortage of pilots. "Training a pilot is a long-term investment for us: to have them sufficiently trained to be safely operating our planes. Its critical to maintain that manpower but it's becoming tougher and tougher. We are constantly hiring."

Like other airlines in the region, KAL faces difficulties with infrastructure choke points that impact on its operations. "It is happening everywhere. In Hong Kong and at all major Chinese cities. Singapore has slot constraints and airspace over flights to Europe. It is of very serious concern to us and all the airlines coming into Asia," he said.

"Incheon is starting to see constraints on slots. It's not that building another runway will solve it. It's that the airspace is very limited over Korea and that constrains our usage of the airport."

Cho is quite pragmatic about achieving cost reductions at the group. "Right now, airlines are never that profitable. There is not much we can do. Most of the costs come from fuel (KAL hedges about 20% of its oil needs). We don't have control over price. However, we will grow our network, grow our marketing to increase revenue and partner with other airlines like Delta. We are looking at possibilities with other airlines to do JVs and also even stronger partnerships. It is the only way you can do it," he said. ■

SMBC Aviation Capital sets up in Hong Kong

Global aircraft lessor, SMBC Aviation Capital, has provided a win for the fledging Hong Kong aircraft leasing sector with the announcement that it would open an operating company in Hong Kong this month. The lessor, with headquarters in Dublin, previously operated in the Hong Kong with an affiliated company.

SMBC Aviation Capital CEO, Peter Barrett, said in Hong Kong last month: "We are opening another chapter in the story of SMBC Aviation Capital. Hong Kong is an attractive place for us to do business. It is one of the Asian capital markets hubs, serves as a home base for a multitude of aviation related businesses and remains a key centre for global trade.

"Additionally, as the low-cost airline model gathers pace in China and elsewhere in the region, we are determined to bring to bear our expertise to service new and existing customers.

"We have reached a size and scale in Hong Kong where it makes sense for us to set up a subsidiary. It also underpins our strategy to build our presence in one of the fastest growing airline markets in the world."

Barrett said SMBC would maintain its principal presence in Dublin "which continues to serve our business and industry extremely well, with a strong eco system, treaty network and other government support",

he said.

SMBC has 100 airline customers in 42 countries. At March 31 this year it owned managed and was committed to 670 aircraft. Established in 2001, the lessor was acquired 11 years later by a consortium that mainly included Sumitomo Mitsui Financial Group and the Sumitomo Corporation.

At the AirFinance Journal Hong Kong Aircraft Leasing Taxation Workshop in October, several speakers said many aircraft lessors appear interested in setting up an aircraft leasing platform in Hong Kong and that far more are privately exploring the potential use of the tax regime.

"At the beginning said treasurer of the Hong Kong Aircraft Leasing Association and PwC partner, Clarence Leung, "airlines resisted doing deals in Hong Kong because they have never used the tax regime.But since ICBC persuaded Korean Air to lease aircraft from it in Hong Kong, airlines are getting a bit more receptive to using Hong Kong." ■

CDB Aviation signs up Vietnam's newest carrier, Bamboo Airways

CDB Aviation Aviation Lease Finance DAC (CDB Aviation), a 100% owned subsidiary of Irish lessor CDB Leasing, have signed a lease agreement with Vietnam's newest carrier, hybrid start-up Bamboo Airways, for three new A320-200neo.

The CDB deal is the first aircraft lease written by the carrier and the lessor's first lease to an airline in Vietnam. Bamboo will be a hybrid carrier offering a mix of premium and LCC fares on the same flight. It has announced plans to serve Asia and also long-haul routes to Europe and North America.

CDB Commercial Aviation chief commercial officer, Patrick Hannigan, said: 'We are pleased to welcome our newest and first customer in Vietnam and support the carrier's ambitious development plans to meet demand from the nation's booming tourism industry and its rapid international travel growth.

"With innovative financing solutions and access to a robust order book for the most advanced and efficient aircraft, CDB Aviation is well positioned to support airlines in the world's fastest growing travel market."

Bamboo Airways CEO, Dang Tat Thang, said: "this is an important step in the journey of Bamboo Airways to prepare the best facilities for our guests. We are eager to receive aircraft from CDB Aviation, our strategic partner."

Bamboo ia a wholly owned subsidiary of aviation to farming conglomerate, FLC Group. The new airline plans to begin domestic commercial flights by year-end and quickly expand its network to China, South Korea and Japan. ■

PEOPLE…

Wanchai beware. News has reached Orient Aviation a little late, but we can confirm **Arthur Herrity**, formerly of Willis Leasing, decided retirement was not much fun and that his old job was.

Since January this year, Herrity has been the principal and sole employee of The Aerospace Company, headquartered in his former place of residence, downtown Hong Kong. He told Orient Aviation last month that space at his new-ish home was tight so the wine fridge, packed with champagne ("I only like the real stuff") resides in the corridor. ■

Airbus encourages investment in China as U.S tariffs bite on Mainland

As the trade war between the U.S. and China intensifies, Airbus is increasing its investment in the world's biggest aviation market. In Beijing last month, the European manufacturer's chief procurement officer, Klaus Richter, said it hoped to cooperate with more Chinese suppliers, including private companies.

Speaking on the eve of the delivery of an A320 to China Express Air that was assembled at Airbus' Tianjin Final Assembly Line, Richter said the seats for the aircraft were produced by Hubei province-based Jiatai Aircraft Equipment Co Ltd. It was the first time an A320 aircraft had been fitted with Mainland manufactured seats.

"We hope to cooperate with more Chinese suppliers in producing structural parts, such as lavatories, ceilings and seats," said Richter. "This will save a significant amount of transportation cost and raise efficiency. We also are persuading our European and U.S. suppliers to set up plants in China and make investments in the country."

Total output from industrial cooperation between Airbus and Chinese companies has increased from US$120 million in 2008 to $741 million last year. It is expected to reach $1 billion by 2020.

For its single-aisle family aircraft, Airbus spends between $15 billion to $20 billion a year on the procurement of parts from more than 250 suppliers, including several Chinese manufacturers. Globally, Airbus cooperates with more than 1,500 suppliers.

In China, the Aviation Industry Corporation of China (AVIC) recently won qualification to produce galleys for A320s delivered from Tianjin. Airbus has said it would like to develop a cabin supply chain with AVIC.

Airbus Commercial Aircraft China chief operating officer, Francois Mery, said the company wanted to establish a vertical integration supply chain in China, which would allow Airbus to purchase raw materials and assemble parts and aircraft in China.

With 20% of all single-aisle aircraft being delivered to Chinese customers, Airbus and Boeing are focusing on their operations in China. there. Boeing will soon unveil its first overseas completion and delivery center for the B737 at Zhoushan, Zhejiang province and will deliver the first single-aisle B737 MAX plane directly from Zhoushan to a domestic airline later this year. ■


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CABIN CONNECTIVITY

Singapore Airlines and Panasonic Avionics clinch top APEX award

APEX (Air Passenger Experience Association) has announced **Singapore Airlines** and the **Panasonic Avionics Corporation** (Panasonic) are the winners of the "Best Personalisation Innovation award at the association's 2018 annual awards ceremony.

APEX said the award recognized myKrisWorld, a new inflight entertainment connectivity solution developed by SIA, Panasonic and a subsidiary of the manufacturer **Tactel**. MyKrisWorld creates personalized inflight experiences for passengers and allows the carrier to extend its loyalty program to the airline's onboard services.

SIA senior vice president customer experience, Yeoh Phee Teik, said: "Singapore Airlines is proud to have worked with Panasonic to develop this world first in terms of personalized inflight entertainment features.

"SIA is constantly looking for innovated ways to create a better travel experience for customers and we will continue to do so by offering cutting edge products onboard."

Panasonic Avionics Corporation CEO, Hideo Nakano, said: "This award represents the latest milestone in our longstanding parternship with Singapore Airlines, who are an innovative leader and a highly valued customer.

"Personalisation is revolutionizing the way airlines engage with their customers. This award demonstrates how we and Singapore Airlines are together pushing the boundaries of the passenger experience." ■

AAR introduces airvolution for component repair management

U.S. headquartered global aftermarket solutions company, **AAR**, last month launched a cloud-based solution for component repairs, **AIRVOLUTION**.

The new AAR tool has unlimited document and digital asset storage which allows for all materials related to a given repair to be stored in a centralized, easy to access location. It can process quotes, manage suppliers and contracts and capture warranty claims. Additionally, AIRVOLUTION offers the ability to ensure competitive pricing by producing automated price checks gathered from historical and market benchmarks.

Full service support, either on an ad hoc basis or in an ongoing capacity is fully integrated into AIRVOLUTION and is available via AAR's component repair division, **Airinmar**. Airinmar, acquired in 2011, manages 180,000 repair transactions a year, at a value of US$700 million.

AAR president digital services, Jim Gross, said: "We have developed a robust application, tailored to specifically to meet the aviation industry supply chain's growing demands for higher visibility, improved component availability and reduced operating costs."

AAR employs 6,000 staff in 20 countries. It supports commercial aviation and government customers through two operating segments: Aviation Services and Expeditionary Services. Aviation Services offers inventory management, parts supply, OEM parts distribution, aircraft MRO, engineering services and component repair. ■

Indonesia' GMF and AFI KLM E&M form partnership

AFI KLM E&M and **Garuda Indonesia MRO subsidiary, GMF**, last month signed an agreement to jointly improve and develop the Indonesian company's systems and strengthen the footprint of the European headquartered MRO in Asia.

The signing ceremony between **GMF president and CEO, Iwan Joerniarto**, and **AFI KLM E&M executive vice president, Anne Brachet**, took place before Indonesia's president, **Joko Widodo**, at the Indonesian Investment Forum in Bali in October.

"The appointment of AFI KLM E&M as a strategic partner has passed through the selection stage. AFI KLM E&M is the most suitable partner for GMF's needs in branding, quality and high company value. The AFI KLM brand is known worldwide and is expected to attract a bigger market for GMF which aims to be one of the top ten MROs in the world by 2021," the MRO said.

"We are trying to deliver tailored solutions, ultimate facility and excellent quality at a reasonable man hour rate. With this partnership we believe we could leverage our new brand image as a total MRO solutions provider."

Brachet said: "We are convinced this partnership is the right strategic move for us. The combination of our strengths and footprint is an asset for our existing and future customers. It will give us an even better position in the Asia-Pacific MRO needs where demand is booming." ■

India's Jet Airways extends agreements with Travelport and Sabre

Full service Indian international carrier, **Jet Airways** has announced five-year contracts with global travel commerce platform, **Travelport**, and leading technology provider, **Sabre Corporation**, commencing from April next year.

Jet will use **Travelport's Rich Content** and **Branding** that will display graphic content and Jet's full range of fare families and ancillary products. **Travelport head of air travel partners, Damian Hickey**, said: "Travelport's commitment to the Indian travel

market and the provision of the widest range of content has been further evidenced with this new mutual commitment between Jet Airways and our company.

"Our position [in the rest of the world], where Jet Airways services the Indian diaspora, tourists and business people travelling to this amazing country, means we are able to deliver to Jet a wide mix of international travelers as well as the millions of outbound and domestic Indian travelers they serve."

Sabre's extended agreement with Jet will provide the carrier with Sabre connected agents across India and the option for travelers worldwide to access its full content.

Sabre vice president air line of business Sabre Travel Network Asia-Pacific, Rakesh Narayanan, said" "under this agreement, Sabre will continue to power Jet Airways' global content distribution and provide end-to-offerings to Sabre agencies." ■

Stellar Labs and Rockwell Collins launch next gen flight ops management solution

Silicon Valley aviation technology innovator, **Stellar Labs** and aviation systems conglomerate, **Rockwell Collins**, are jointly developing a suite of integrated cloud-based applications that will supersede Rockwell Collins' ARINCDirect flight operations system (FOS).

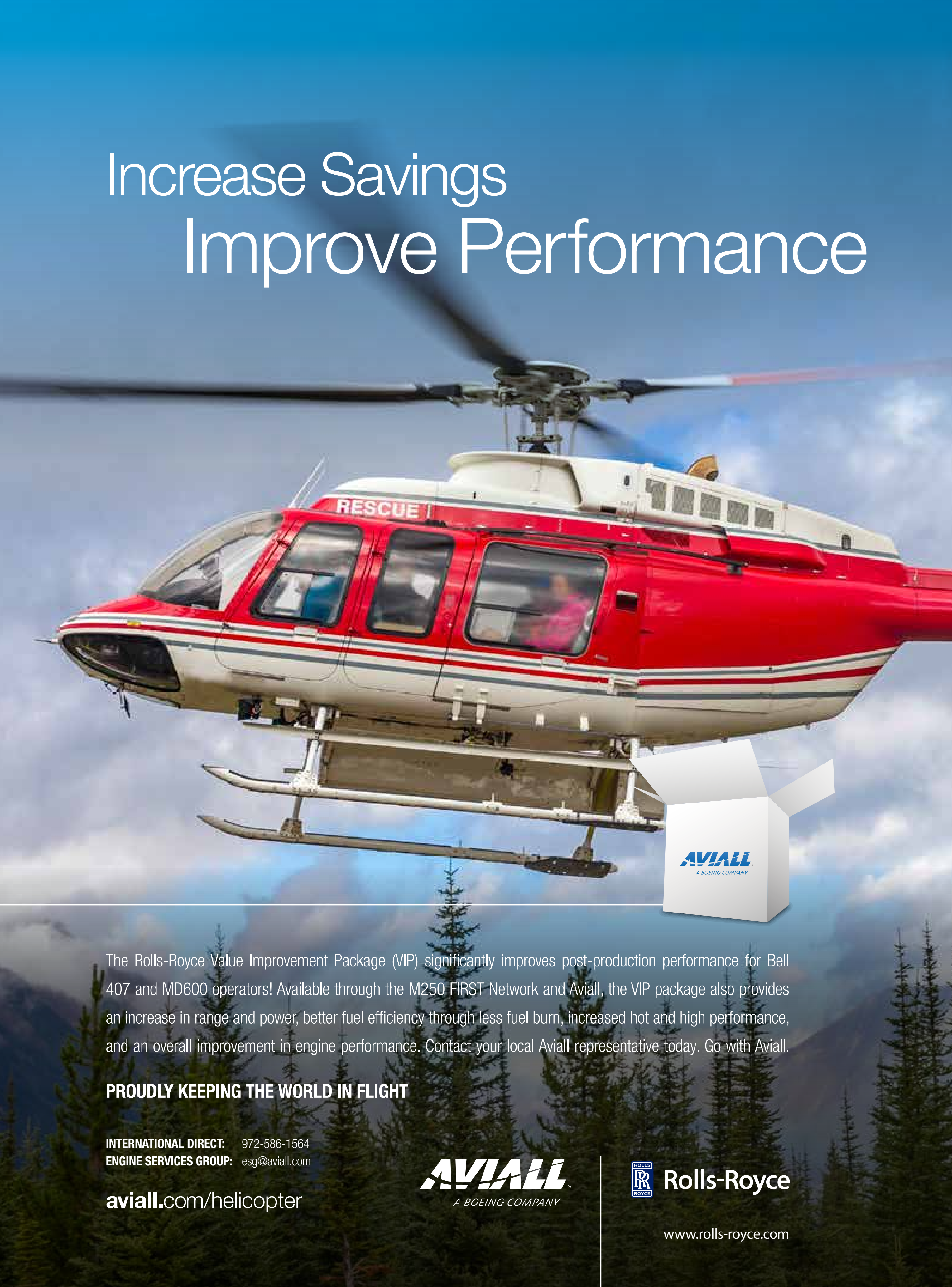
The first set of the cloud-based modules will allow charter operators to quickly create and send branded quotes for multiple aircraft and itinerary solutions.

With the trip planning tool users can utilize a web-based portal or mobile devices to receive estimated flight times, view scheduled flights and have more detailed access to itineraries, passengers' profiles and services.

The reporting and analytics tool will help sales and revenue managers better understand quoted and scheduled flight volumes, conversion rates, revenue and profit margins with pre-configured reports.

Rockwell Collins vice president business and government aviation, David Poltorak, said "providing these new capabilities to our customers is just one way we are enhancing the user experience for ease, organization and smoother back-end operations".

Stellar CEO, Steve Fox, said: "Following the introduction of Stellar Cloud earlier this year, the launch of the next generation of FOS brings a powerful web-based solution for flight operations management to an industry that badly needs it." ■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MRO industry disruption continues as OEMs increase dominance in hangar

ISSUES CRITICAL TO ASIA-PACIFIC MRO PROFITS

- **Regulate standards across the region and subject them to global benchmarks**
- **Digital will shape the MRO market of the future as optimized digital MRO programs reduce hangar time and put pressure on labour and costs**
- **Singapore holds 10% of the global MRO market because it has invested heavily in digital MRO systems**
- **Graduate more technicians and engineers across the region to operate MRO facilities equipped with next gen technology to address industry staff shortages**
- **All global MROs are increasing partnerships with Asia-Pacific MROs, especially in South and Southeast Asia, to win greater market access especially with airline-owned MRO subsidiaries**
- **China and India are investing in their domestic MROs industries. The Mainland's COMAC is a significant example of such investments**
- **The MRO Industry must develop a transparent, comprehensive framework for mitigating and managing cyber risk**
- **Asia-Pacific MROs must ensure they build a corporate culture that supports training, fair salaries and diversity in hiring if they are to stem an industry brain drain to MROs beyond the region.**

Major trends in airline MRO that will dictate the hangar of the future are the escalating presence of Original Equipment Manufacturers (OEMS) in the aftermarket sector, MRO aftermarket consolidation, the impact of game-changing technology on MRO operations and the necessity to build industry wide defences against cyberattacks.

In the Oliver Wyman 2018 MRO survey, Tackling Industry Disruption, 69% of OEMs identified the charge of the OEMs into the airline MRO sector as the biggest disruptor to their businesses. Those surveyed also believed OEMs to be the most dominant players in the industry by 2021.

The [MRO] industry expected the OEMs, primarily the engine and component manufacturers, to continue to expand as they benefit from control of their Intellectual Property (IP), the Oliver Wyman authors said. OEM-owned IP can limit choices for components and services. Inevitably, prices have risen in the sector as a result.

Ninety seven per cent of the

survey's respondents reported increases in the costs of materials in the last 12 months and said they feared OEMS would recapture more IP as their MRO business expanded. Airlines faced additional cost pressures as a shortage of skilled technicians was pushing up the cost of labour across the region.

Technician billed rates per hour in 2018, to date, are US$70 in Western Europe, low US$50s in the U.S and Eastern Europe, mid US$40s in China and Latin America and US$43 in South Asia.

Boeing Global Services has a goal of being a US$50 billion a year company, in a combination of commercial and military MRO, by 2026. In 2016, Airbus predicted the OEM aftermarket would increase to US$3 trillion by 2035 with MRO work making up $1.8 billion of the total. The Toulouse manufacturer said the sector would expand by 4.6% a year.

Oliver Wyman wrote that some MROs have or intend to form partnerships with OEMs to ensure component supply. Others are employing Used Serviceable Materials (USM), which is the scrapping out of out of service aircraft and the re-using of their components. Seventy six per cent of survey respondents said USM would increase.

Honeywell Aerospace senior director commercial aviation, Sathesh Ramiah, told Orient Aviation last month that airline MRO is booming in the Asia-Pacific with Airbus forecasting the region would have a total spend of US$660 billion by 2036.

"This has led to growing interests and investments from airlines, OEMs and logistics companies to bolster their capabilities, especially in developing countries seeing a rise in passenger traffic prompted by the penetration of low-cost carriers in these markets," he said.

Honeywell's most recent connected airport report confirmed predictive maintenance is a priority for investment by airlines because it offered massive potential for cost savings and improved

operations. Data from the report showed nearly 60 percent of airlines are looking to purchase predictive maintenance technologies in the next 12 months and even more are expected to do so further down the road.

Cathay Pacific Airways, the Singapore Airlines Group and Hainan Airlines are among the carriers in the region that are using technology to make their operations more efficient. By leveraging connectivity and big data, operators and maintenance crews can gather real-time data wirelessly from auxiliary power units (APU) and other components and report any potential component failure before it happens. Trials by Honeywell show its GoDirect Connected Maintenance solution can reduce APU-related flight delays by 35% and provide 99% accuracy when predicting part failures.

The Indian national government has made the development of a future gen MRO industry on the sub-continent an investment priority. It has estimated opportunities in the MRO civil aviation and defence sector to be worth US$2.25 billion by 2025.

In a joint venture with Indamer Aviation, AAR is building an MRO airframe shop in Nagpur India that will include upgraded training programs for the Indian MRO's technicians. While the facility is being built, MRO training of selected Indian staff will be done at AAR facilities in the U.S.

The government allows 100% foreign direct investment for MRO, flight and technician training academies and a ten year 100% tax exemption for airports. ■

MRO industry unprepared for cyber attacks

The Asia-Pacific airline MRO industry must urgently develop a comprehensive framework for mitigating and managing cyber risk, aviation risk analysts universally agree. They estimated criminal syndicates of hackers cost economies worldwide half a trillion dollars this year and that the profits of the fraudulent global business continue to grow.

Approximately 90% of the world's airlines have a security strategy in place to fight off a cyber attack, but only 41% of carriers have established cyber security protection for their third party vendors. MROs themselves are the least protected, with 9% of the industry prepared to defend a cyber assault.

Fifty per cent of major airframe, engine and component manufacturers told the authors of the 2018 Oliver Wyman MRO report they could deflect a cyber attack, it said.

Systems vulnerability can take many forms at airline MROs and OEMs in the Asia-Pacific, especially as digitalization grows in the industry. Chief among them are the ability of hackers to penetrate an MRO defence wall via a less protected third party supplier, varying standards for cyber security that allow hackers to operate across borders, lack of uniformity in the industry's approach to cyber security and the constant rotation of data through several networks that allows the hacker to remain anonymous as he or she seeks their ultimate destination.

In general, digitalization should be a point of acute attention in fighting off cyber attacks because unsecured data allows access points to other data that may not be protected. "It makes everyone vulnerable because potential targets, especially smaller companies, do not have the cyber preparedness of larger resourced companies, " the Oliver Wyman report said.

All aviation MROs, and the industry at large, should establish a cyber security policy based on the National Institute of Standards and Technology of identity protection, detection, respond and recovery. ■

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