May/June 2019

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Winds of **change**

Lessors and financiers have mixed views about the current state of the world economy, although most agree a downturn is near.

The European banking sector is in a transition. The main French banks continue to be active capital providers to the aviation industry, while the UK banking system is making a return to the market. *Airfinance Journal* can reveal that one large UK banking institution is looking at vanilla deals, but might look at Japanese operating leases with call options too, if they can get their heads around the tax structures.

In Germany, Deutsche Bank and Commerzbank resumed talks about a potential merger in the first quarter and officially announced merger talks mid-March.

The two banks confirmed the move to deeper discussions in statements, capping months of speculation and behind-the-scenes talks with the German finance ministry. Both firms have struggled to restore revenue growth after deep cuts to their investment banking units – a task made more difficult by a sluggish economy that has pushed back expected interest rate rises.

The merger would probably have consequences for both aviation-lending practices.

But the M&A that grabbed most of the headlines over the past 18 months concerned DVB Bank.

Airfinance Journal followed the sale of the DVB Bank aviation arm from November 2017, when it was rumoured to be up for sale by parent company DZ Bank, to its conclusion on 1 March. We named the parties involved and exclusively revealed in February that the DVB Bank acquisition by MUFG would involve an operating platform. In this issue, *Airfinance Journal* has an exclusive interview about the structure.

While DVB's lending and origination activities are expected to complement those of MUFG, it presents plenty of new opportunities for the Japanese lender.

Aviation is a growth pillar for MUFG and in acquiring DVB Bank's aviation business it is seeking to leverage its expertise in asset management and investment management. DVB also brings a dedicated research capability as well as an advisory practice.

The deal is the latest for Japan's biggest bank in a spate of acquisitions abroad as it seeks to make up for low returns in a country that is beset by rock-bottom interest rates and slow economic growth.

It has been an eventful first four months.

At an industry event in Dublin at the end of March, the mood among lessors and financiers was mixed, but the general consensus was that a cyclical downturn is near. Some are still upbeat but the market is under pressure from airlines to lessors and the Boeing Max situation is adding another layer of stress. Others say the downturn has begun already. Another group feels the industry has peaked after low fuel prices, cheap capital and strong traffic demand facilitated a protracted period of growth.

As *Airfinance Journal* went to press, oil prices jumped above $70 a barrel, its highest level of the year as domestic affairs in Libya unsettled the market. The spike in Brent crude to $70.26, the highest level since November 2018, is likely to be felt soon and this is not good news for airlines. Oil prices were less than $50 a barrel at the start of the year.

The escalation of the conflict in Libya, which pumped about 1.1 million barrels a day in March, adds to risks to supply from Iran and Venezuela.

The skirmishes come against the backdrop of an Opec oil cartel ready to keep current production cuts in place beyond June.

Airline restructurings are underway and we have yet to find out about the future of Avianca Brasil and Jet Airways.

Last year saw a large number of airlines cease operations as the pinch of rising fuel prices and labour costs, as well as rising interest rates, took their toll on carriers.

The casualties continued this year. Germania, Wow Air, Flybmi, Dutch carrier Insel Air and Pakistan's Shaheen Air have ceased operations, while Flybe in the UK was rescued in February.

Airline margins have come down. In the first quarter of this year low-cost airline Ryanair issued its second profit warning in four months, saying airfares were falling more than expected over the winter.

The current airline environment is also a challenge for capital providers – the banks. The increasing challenging market conditions have put pressure on some banks to deliver more reasonable terms and pricing level.

The consensus is for an adjustment of the risk/return equation, which is currently too tipped in favour of the borrower because demand for bank financing is not enough for the supply. The result is that pricing is too tight and terms (loan to values, etc) are getting too aggressive.

"The market right now is at a tipping point," said Pierre Briens, BNP Paribas head of aviation in the Asia-Pacific, at the *Airfinance Journal* Japan 2019 conference. "I hope there will be a rebalancing toward the capital providers as opposed to the borrowers. The returns on risk taking are becoming quite unreasonable. A lot points to a readjustment of the market."

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Aviation Capital Group / AirBridgeCargo Airlines
USD 140 Million
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Lead Arranger and Structuring Agent
February 2019

Copa Airlines
USD 400 Million
JOLCO
Left Lead Arranger and Facility Agent
February 2019

Alaska Airlines
USD 60 Million
Term Loan
Sole Arranger
January 2019

Novus Aviation Capital
USD 415.5 Million
Operating Lease Financing
MLA, Account Bank, Security Agent, Facility Agent, and Bookrunner
December 2018

TUI
EUR equivalent of USD 161 Million
JOLCO
MLA, Account Bank, Security Agent, and Facility Agent
December 2018

Horizon Aircraft I Finance Limited (BBAM)
USD 612 Million
Asset Backed Securities
Active Bookrunner
November 2018

AASET (Carlyle Aviation Partners)
USD 613 Million
Asset Backed Securities
Active Bookrunner
October 2018

BOC Aviation Ltd.
USD 750 Million
Unsecured Term Loan
Global Coordinator
October 2018

Aircastle
USD 650 Million
4.400% Notes due 2023
Active Bookrunner
September 2018

BOC Aviation Ltd.
USD 500 Million
FRN due 2023
Active Bookrunner
September 2018

Air Lease
USD 1.2 Billion
3.500% Notes due 2022 /
4.625% Notes due 2028
Active Bookrunner
September 2018

Willis Engine Securitization Trust
USD 373 Million
Asset Backed Securities
Active Bookrunner
August 2018

AerCap
USD 600 Million
4.450% Notes due 2025
Active Bookrunner
August 2018

Air Lease Thunderbolt II
USD 450 Million
Asset Backed Securities
Active Bookrunner
July 2018

American Airlines
USD 190 Million
Senior Secured Portfolio Term Loan
Structuring Agent, Bookrunner, and Joint Lead Arranger
June 2018

BBAM / Asia Aviation Capital
USD 1.2 Billion
Senior Secured Acquisition Facility
Mandated Lead Arranger, and Bookrunner
June 2018

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NAC picks DeBrusk and promotes Kirby

European lessor Nordic Aviation Capital (NAC) appointed Ryan DeBrusk as head of marketing Americas, in April, replacing Neville Taylor.

DeBrusk has responsibility for NAC's airline marketing team within the Americas and reports to the company's chief marketing officer, Mathieu Duquesnoy.

He has more than 18 years' experience in the aviation industry and was previously vice-president, commercial aircraft sales, Europe, at Bombardier.

NAC announced that Taylor will retire from his position later this year after more than nine years as head of marketing Americas.

Taylor joined the lessor in 2010, having previously worked as a consultant for MDT Europe and for 10 years for Bombardier as vice-president structured finance.

Nordic Aviation Capital also announced the appointment of Elaine Kirby, as chief contract officer. Kirby, who will have responsibility for client services, transaction legal and business processes, will report to the company's chief executive officer, Søren M Overgaard.

She began her career in NAC as a project manager in May 2014, leading the Europe, Middle East and Africa deal team in the negotiation of aircraft sale-and-lease agreements.

Kirby progressed to being the group's vice-president, head of business processes, in March 2017.

She had ownership and responsibility for ensuring best processes throughout the business.

Kirby has more than 20 years' experience in the aviation industry. She previously worked for GECAS in a variety of roles, most recently in marketing operations.

Elaine Kirby

Slattery to head Boeing-Embraer joint venture

John Slattery

John Slattery has been named president and chief executive officer (CEO) for the commercial aviation and services joint venture between Boeing and Embraer.

He is the president and CEO of Embraer Commercial Aviation and executive vice-president of Embraer.

Slattery who will report to Marc Allen as the chair of the new company's board of directors, remain based in São Jose dos Campos, Brazil.

He joined Embraer in 2011 as senior vice-president responsible for customer finance, asset and risk management. He spent 15 years previously in executive roles in commercial aviation advisory, leasing and banking organisations.

Allen, Boeing's International president, has been named as senior vice-president of Boeing and president of Embraer Partnership and Group Operations.

Reporting to Boeing chairman, president and CEO, Dennis Muilenburg, Allen becomes Boeing's lead executive responsible for preparing for integration of multiple Embraer group operations with Boeing, and on the deal's closing, for delivering on execution, financial performance and growth of the Embraer partnership assets. He will continue to serve as a member of Boeing's executive council.

The changes were effective 22 April.

Michael Arthur, president of Boeing Europe and managing director of Boeing UK and Ireland, will succeed Allen as president of Boeing International.

Chorus Aviation brings in Jazz's Osborne

Canadian company Chorus Aviation has named Gary Osborne as chief financial officer, effective 8 May. He replaces Jolene Mahody, who was appointed executive vice-president and chief strategy officer.

Osborne has been vice-president, finance and business services at Jazz Aviation, where he has worked for 14 years. He will have responsibility for Chorus's overall financial strategic direction, comprising financial reporting and planning, treasury, taxation and internal audits.

As executive vice-president and chief strategy officer, Mahody retains responsibility for investor relations, and will also be responsible for strategic and corporate planning, mergers and acquisitions, government and community relations, marketing, corporate communications, corporate human resources and culture.

GAT names Geissler VP aviation lease solutions

GA Telesis (GAT has named Kevin Geissler as vice-president aviation lease solutions.

Geissler will be responsible for oversight and development of the company's inventory leasing business as well as its auxiliary power unit and landing gear leasing businesses. GA Telesis currently has an inventory lease portfolio consisting of rotable components for the Boeing 737, 747, 767, 777, 787 and Airbus A320, A330 and A350.

Geissler began his career at Curtiss Wright Accessories, the aftermarket repair business of the OEM, which was subsequently acquired by GA Telesis in 2008.

He spent several years post acquisition in the company's MRO services unit as a business unit controller and as corporate assistant controller before being promoted to vice president and corporate controller in 2013.


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Lufthansa extends Svensson contract

Deutsche Lufthansa's supervisory board has extended the contract of Ulrik Svensson for three more years, until 31 December 2022. Svensson has been a member of the executive board and chief financial officer of Deutsche Lufthansa since 1 January 2017.

Before that he was chief executive officer of Melker Schörling for 10 years and was responsible for the six listed companies within the investment company: Hexagon, AAK, ASSA ABLOY, Securitas, Hexpol and Loomis.

In 2003, Svensson joined Swiss International Air Lines as member of the board and chief financial officer. He was instrumental in the restructuring of the company.


Ulrik Svensson

Nok Air appoints new CFO

Nok Air has appointed Umaporn Pornpimolwat as chief financial officer (CFO). Pornpimolwat replaces Pawinee Chayavuttikul, who resigned on 11 March.

Chayavuttikul was appointed Nok Air's CFO in June 2016.

Nok Air's chief executive officer (CEO), Piya Yodmani, resigned from the company on 27 August 2018. Director Pravej Ongartsittigul is acting CEO.

Hallerström joins Rockton board

Stockholm-based lessor Rockton Aviation has appointed Nils Hallerström, the former chief executive officer of PK Airfinance, to its board of directors.

He was appointed as an independent non-executive director to Novus Aviation Capital's board of directors in January.

Hallerström was the president of PK Finans from 1991. In 2000, PK was acquired by General Electric Capital and changed its name to PK AirFinance. Hallerström held the position of president for GE Capital Aviation Services/PK AirFinance until the end of 2018.

Last November, Rockton Aviation purchased two Bombardier CRJ1000s with leases attached to Air Nostrum. The Swedish operating lessor also sold five Saab 2000s last year.

Jackson Square appoints new chairman


Osamu Muramoto

Jackson Square Aviation has announced that Osamu ('Sam') Muramoto will become the next chairman of the aircraft leasing company, effective 1 June, 2019.

He succeeds Naoki Sato, managing executive officer of Mitsubishi UFJ Lease & Finance Co. Ltd. (MUL), who has been chairman of Jackson Square Aviation since it was purchased by MUL in January 2013.

Muramoto, managing executive officer of MUL, also succeeded Sato as head of MUL's aviation business unit effective 1 April, 2019.

He has been a member of MUL's aviation business since 2013 and he has worked closely with Sato over the past six years. He has extensive knowledge of JSA's business and strong relationships with JSA's executive team.

Embraer announces new president and CEO

Embraer has announced Francisco Gomes Neto, the current president of Marcopolo, as its next president and chief executive officer (CEO), succeeding Paulo Cesar de Souza e Silva.

As *Airfinance Journal* went to press he was due to be presented to the board of directors for election on 22 April, after the general shareholders' meeting.

With an electrical engineering degree, Gomes Neto built his career in the automotive industry, holding CEO positions over the last 20 years, both in Brazil and in the USA. Over the past three years, he has served as CEO of Marcopolo, in which he successfully led the company's transformation, generating strong sales growth and market value for the business. Previously, he was the CEO Americas for Mann+Hummel and president of Knorr Bremse (global leader in control systems for commercial vehicles), among other leadership positions.

Paulo Cesar de Souza e Silva will take on a role of senior advisor to the board of directors, during the onboarding of Gomes Neto and throughout the segregation of assets and resources of the commercial aviation business, until the completion of the partnership with Boeing.

Norwegian appoints CFO as deputy CEO

Norwegian Air Shuttle has appointed current chief financial officer (CFO) Geir Karlsen to the position of deputy chief executive officer.

Karlsen joined Norwegian as CFO in April 2018. He has extensive experience from listed companies within shipping and offshore. He has over the last 12 years held various CFO positions with international companies such as Golden Ocean Group and Songa Offshore.

Before joining Norwegian, he held the position of Group CFO at London-based Navig8 Group, the world's largest independent pool and management company.

Karlsen will keep his CFO role at Norwegian.

Cape Town confusion after **Avianca Brasil collapse**

The legal issues concerning the repossession of aircraft from the bankrupt carrier could have wider repercussions.

Lessors have been vocal about their frustration in repossessing aircraft after the Avianca Brasil bankruptcy.

Aircastle chief executive officer, Mike Inglese, said in February that the lessor was monitoring the bankruptcy of the carrier and how the Cape Town Convention played out with respect to repossessing aircraft.

"The Avianca's bankruptcy judge extended the stay on repossession until mid-April in contravention of Cape Town in our view," he says, adding the lessor has appealed and believes it is on the "right side" of the law and the facts.

A local lawyer source recalls that the Cape Town Convention was applied when the judge ordered a suspension from any enforcement for 30 days (this stay period was set by the Brazilian state when signing the Cape Town Convention).

In Avianca's case, the judge set a new suspension until 1 February 2019 in the hearing held between Avianca and all lessors on 14 January.

"On 21 March, the judge let all lessors take all aircraft back. But he tried to get conciliate again with the lessors because the national air system could suffer an impact with Avianca's bailout. As a consequence, a hearing was set on 27 March but no agreement was reached," explains the lawyer.

The assembly to discuss Avianca's recovery plan, scheduled for 29 March, was postponed until early April. The lawyer says the Superior Court suspended all aircraft repossessions until the assembly because it would harm any financial recovery and keep the system working.

One leasing source says the Cape Town Convention is not fully in line with Brazilian bankruptcy code. "This could be a problem where other countries have ratified Cape Town and it contradicts local bankruptcy law," he says. "Within Brazil there is a history of letting airlines get back on their feet and giving them a chance to reorganise themselves.

"In this case, however, lessors cannot repossess the aircraft but the airline is supposed to keep paying. In theory then, lessors are not suffering harm for what airlines are using as long as they are paying for it."

The source adds that lessors are supposed to be in a special class of creditors in Brazil because of the Cape Town Convention.

"In theory, lessors are supposed to have a clear path to getting their aircraft back and, as a result, don't have voting rights along with other creditors. This falls apart when the Cape Town Convention is ignored and falls apart completely if the airline then also stops paying rent," says the source.

The lawyer says this is because the article that allows repossessions is valid only for the bankruptcy. "With the judicial recovery [like Chapter 11 in the USA], the Cape Town Convention is not fully in line. So, there is a lack in the Cape Town Convention."

> *"In theory, lessors are supposed to have a clear path to getting their aircraft back and, as a result, don't have voting rights along with other creditors. This falls apart when the Cape Town Convention is ignored and falls apart completely if the airline then also stops paying rent."*

He adds: "I think the Cape Town Convention can be reviewed because the word 'insolvency' has different interpretations. In Brazilian Portuguese, the word insolvency means bankruptcy.

"Adding the expression 'lack of payments' will offer better legal certainty for all parties [airlines, lessors and courts]. Besides, the Cape Town Convention could create some proceedings for the lack of payments. For instance, a letter before action – a stay period for negotiations between airlines and lessors. If the airline asks for Chapter 11 or a similar mechanism, the stay period can be at most 60 days. In this scenario, the airline recovery plan can be approved and will avoid any suspension to repossession for a long period."

Creditors led by hedge fund Elliott Management approved a restructuring plan for the bankrupt airline on 5 April.

The plan, which was to be submitted for court approval, provides for the creation and auction of seven isolated production units (IPUs). Six of them will contain parts of Avianca slots at the Congonhas, Guarulhos and Santos Dumont airports. The seventh will encompass the company's loyalty programme.

As a consequence Avianca Brasil plans to release up to 50 aircraft to lessors over the next five months.

The Brazilian carrier is in the process of releasing two aircraft, according to a fleet document. Avianca Brasil was scheduled to release five aircraft in April at different dates: 14 April, 21 April and 28 April.

Plans for May include three releases. According to *Airfinance Journal*'s Fleet Tracker the majority of those releases are A320neo aircraft that are owned by GECAS subsidiaries.

The document shows eight releases in June, including six A320s on lease from Aviation Capital.

Plans for July include 16 releases, of which 10 units are from Aircastle.

In August the Brazilian carrier plans to release eight units: one leased from Jackson Square Aviation; one leased from Vermillion; two aircraft owned by AirCol entities; and four A318s leased from Airbus Financial Services.

Beijing cements Hong Kong and Cathay

When the leaders in Chinese aviation descended on Hong Kong in April for the fourth Aviation Silk Road Conference and Airports Council International World Annual General Assembly, they alleviated fears that Hong Kong and its flag carrier could be sidelined under Beijing's ambitious Belt and Road Initiative. **Dominic Lalk** reports.

The administration in Beijing made it clear that it supports Hong Kong taking the lead in advancing China's lofty trade and infrastructure ambitions through the development of the city's air transportation links.

Civil Aviation Administration of China (CAAC) deputy administrator, Dong Zhiyi, stresses that Hong Kong remains a "very important location" for China's Belt and Road Initiative (BRI) and Greater Bay Area (GBA) cooperation.

The BRI is fuelling expansion of mainland Chinese airlines as it prescribes enhanced sea, road and air links in the country's south and south west, continues on to the mainland's Asian neighbours and stretches its reach to Europe, Africa and the South Pacific.

In the same vein, the GBA forges cooperation in the Pearl River Delta with the aim of transforming Hong Kong and the nine municipalities of Guangdong Province – Guangzhou, Shenzhen, Zhuhai, Foshan, Huizhou, Dongguan, Zhongshan, Jiangmen and Zhaoqing – into an integrated global economic hub, including policy communication, infrastructure connectivity, as well as trade and financing cooperation.

"The CAAC has always paid great attention to the development of civil aviation in Hong Kong," says Dong. "Next, we are going to study how we can better plan civil aviation in the Greater Bay Area to have more defined reforms, high-quality coordinated and differentiated development," adds the regulator.

China's total value of trade with BRI-associated countries exceeded $1 trillion in 2018, which accounted for about 25% of China's foreign trade.

For a while it looked as if the BRI would effectively sideline Hong Kong and undermine the city's status quo as one of Asia's great air hubs. Those fears are slowly alleviating, partly the result of strategic changes at the city's flag carrier Cathay Pacific.

For decades, the easiest and most comfortable way to fly to a second- or third-tier city in China was to transit through Hong Kong, Shanghai or Beijing and onto the final mainland destination. But as mainland Chinese airlines added more and more direct flights to Asia, North America, Europe and the South Pacific, travellers started to bypass Hong Kong.

The massive ramp up witnessed at Chinese carriers forced Hong Kong stalwart Cathay Pacific to wake up and act.

By March 2017, Cathay had reported its first annual net loss in eight years and announced a three-year overhaul to cut $500 million in costs and improve efficiency. Cathay rival Hong Kong Airlines (HKA) never achieved profitability, although there are other factors at play at that carrier, chiefly reckless overspending at parent Hainan Airlines and HNA Group which quickly became HKA's problem.

At Cathay, under its new chief executive officer, Rupert Hogg, the overhaul appears to have paid off. Cathay reported a net profit of HK$2.35 billion ($299 million) for the full year ended 31 December 2018, reversing a HK$1.26 billion net loss posted in 2017.

Operating profit for the full year was HK$3.6 billion, compared with an operating loss of HK$1.45 billion the previous year. Revenues in 2018 were HK$111 billion, up from HK$97 billion in 2017.

Back in the black, Cathay announced in March the acquisition of HNA Group-owned Hong Kong Express Airways (HKE) for HK$4.93 billion, comprising of HK$2.25 billion in cash and a non-cash component of HK$2.68 billion. HKE operates 24 Airbus A320-family aircraft.

As of 31 December 2018, the net asset value of HKE was about HK$1.1 billion. In its latest financial year, HKE recorded a net loss before taxation of HK$141 million.

Cathay does not intend to fold HKE into the parent company. Rather, the Swire Group airline says it will continue to operate HKE as a standalone low-cost carrier, although there have been suggestions the budget arm could be rebranded to Cathay Express.

For more than a decade Cathay has resisted launching a low-cost carrier, although all of its regional – and global – competitors have entered the budget segment in one way or another.

In 2015, Hong Kong's Air Transport Licensing Authority denied Jetstar Hong Kong's application for an operating licence after massive protestations from Cathay. Jetstar Hong Kong – a venture between China Eastern Airlines and Qantas Airways – never took to the skies.

Analysts have expressed mixed feelings regarding marquee Cathay's HKE deal. Many have said the acquisition will save the carrier from becoming irrelevant in the next generation's eye, while others are questioning the viability of running a low-cost carrier at very expensive and hopelessly congested Hong Kong International Airport (HKIA) with a third runway still five years away.

But then again, the takeover comes with significant benefits for Cathay. It will inherit HKE's much sought-after slots at HKIA and it will strip rival HKA of an important feeder carrier into its struggling long-haul network, which is Cathay's bread-and-butter business.

Speaking at the BRI conference, Cathay's chairman, John Slosar, stressed that Beijing ought to seek enhanced intermodal connectivity and relaxed boundary controls with the GBA to turn BRI plans into a better future. He also asked Beijing to create more airspace for civil aviation use to facilitate BRI passenger and cargo flows.

Hong Kong finance secretary, Paul Chan Mo-po, said the city has signed aviation agreements with 67 countries and jurisdictions, 49 of which fall under the BRI. He adds that more agreements will be ratified in 2019.

As Hong Kong gears up to reclaim its position as "Asia's World City", the local government estimates that the market share of Hong Kong in the global aircraft leasing business will reach 18% by 2037. Under a new tax regime, the city is home to a growing list of lessors and family offices looking to transact aircraft.

BOC Aviation's managing director and chief executive officer, Robert Martin, said at the Aviation Silk Road conference: "In 2019, we are probably at the busiest point of new aircraft coming into operation. The supply chain, also here in Hong Kong, needs to keep up with that. There is a requirement to ask the financiers to finance all the way along the supply chain, as well as once the aircraft are delivered to the customers."

Delta returns to the EETC market

After a gap of almost four years, the US carrier is back with an impressive transaction that includes a bullet structure.

Delta Air Lines returned to the enhanced equipment trust certificate (EETC) market in the first quarter of this year with DAL 2019-1, a dual-tranche notes offering.

Airfinance Journal reported the US carrier was looking to issue an EETC transaction in January.

The last time Delta tapped the market was in August 2015, when it raised $500 million through a three-tranche notes offering secured against 15 narrowbodies.

At the time, the $312.5 million AA-class certificates priced at 3.625%. The $69.4 million class-A certificates carried a coupon of 3.875%, while the $118.02 million class-B tranche had a coupon of 4.25%.

Morgan Stanley was the sole structuring agent on that deal, while Credit Suisse, Citi, Deutsche Bank and Goldman Sachs were the joint bookrunners. Other bookrunners included BNP Paribas, Crédit Agricole Corporate and Investment Bank, and Natixis.

On the DAL 2019-1 transaction, the senior tranche priced at 3.204%. Spread to benchmark treasury was 70 basis points (bps) at pricing.

The AA tranche, which has a 49% loan to value (LTV), was sized at $425 million. The certificates are due 25 April 2024.

Joint lead bookrunners Credit Suisse Securities (USA), Citigroup Global Markets, Deutsche Bank Securities and Wells Fargo Securities underwrote $75.375 million each.

Merrill Lynch, Pierce, Fenner & Smith, Barclays Capital, BNP Paribas Securities, Goldman Sachs, JP Morgan Securities, Morgan Stanley, PNC Capital Markets, SMBC Nikko Securities America and Standard Chartered Bank each underwrote $13.22 million.

CL King & Associates and Siebert Cisneros Shank underwrote $4.25 million each.

The A junior $75 million tranche priced at 3.404%, or 90 basis points spread to benchmark treasury.

Credit Suisse Securities (USA) underwrote $13.128 million of that tranche, while Citigroup Global Markets, Deutsche Bank Securities and Wells Fargo Securities underwrote $13.125 million each.

Merrill Lynch, Pierce, Fenner & Smith, Barclays Capital, BNP Paribas Securities, Goldman Sachs, JP Morgan Securities, Morgan Stanley, PNC Capital Markets, SMBC Nikko Securities America and Standard Chartered Bank each underwrote $2.33 million.

CL King & Associates and Siebert Cisneros Shank underwrote $750,000 each.

Both the AA and A certificates were structured with a five-year bullet maturity. The bullet structure is unusual for an EETC transaction, most of which are amortising structures featuring about 12-year tenors and about nine-year-weighted average lives for senior tranches.

The collateral pool will include six Airbus A321s (36.2% of the collateral pool by value), two A350-900s (33.8%), four Boeing 737-900ERs (23.2%) all of which were delivered to Delta last year.

The transaction also marked the A220-100 model debut into the capital markets. Delta included two aircraft of the type that delivered last year in the UAL 2019-1 EETC.

The first airline EETC to hit the market in 2019 was from United Airlines, and raised more than $1 billion in two tranches. These cover 25 recent or upcoming aircraft deliveries, including nine 737 Max 9s, six 787-10s and 10 Embraer E175 regional aircraft.

The $716.6 million AA notes, which have a 42.4% LTV, priced at 4.15% a coupon, representing a 140.6bps spread.

The $296.5 million A notes, which have a 59.9% LTV, priced at 4.55% a coupon, representing a 180.6bps spread.

In the first quarter of 2018, United tapped the market with a dual-tranche deal in a $935.14 million offering. The certificates refinanced two 737-800s, six 737 Max 9s, three 777-300ERs and five 787-9s. All tranches were priced inside 3.75%, with the AA tranche at 3.5% and the A tranche at 3.7%.

United returned to the market late last year with class-B certificates as an add-on to its existing 2018-1 series of EETCs. The $225.7 million in class-B certificates priced at 4.6%.

The DAL 2019-1 deal priced better than United's UAL 2019-1 for two reasons: it is a better rated corporate (Delta is investment grade while United is not). Delta's tenor in the DAL 2019-1 transaction was also shorter than UAL 2019-1.

Could Delta use the capital markets more in the future for its fleet financing? *Airfinance Journal*'s Fleet Tracker shows that the US carrier has more than 300 aircraft on backlog, including 81 A220s, 154 A321/A321neos, 13 Bombardier CRJ900s, seven 737-900ERs, 35 A330neos and 12 A350s.

Its cash-flow position is good and the carrier does not have a significant need for financing. One source says: "Delta is generally deleveraging to facilitate further rating uplift."

Airbus turns to China for orders and A330neo production

The European manufacturer made the global headlines when it announced a deal for 300 Airbus A320-family and A350 aircraft from China in late March. But just how many are new commitments and how much was a PR exercise, asks **Dominic Lalk**.

Airbus and China Aviation Supplies Holding Company (CAS) signed a general terms agreement (GTA) covering the purchase of 300 Airbus aircraft on 25 March. The GTA was signed in Paris by future Airbus chief executive officer, Guillaume Faury, and chairman of CAS, Jia Baojun. Also present – rather unsurprisingly – were the Chinese president, Xi Jinping, and his French counterpart, Emmanuel Macron, begging the question how many orders are fresh and how many simply rehashed as part of a politically motivated public relations exercise?

The GTA comprises 290 Airbus A320-family aircraft and 10 widebody A350-family aircraft. Airbus and CAS say the order "reflects the strong demand in all market segments, including domestic, low-cost, regional and international long-haul from Chinese carriers".

At face value, the order for 300 aircraft is worth more than $35 billion at catalogue prices, although analysts have put the value of new commitments at closer to $20 billion. And that is before the typical discounts often exceeding 50%.

State-controlled CAS last placed orders in 2017, for 140 Airbus aircraft (100 A320-family and 40 A350s) and 300 Boeing aircraft, comprising 250 737s and 50 "widebody aircraft".

Officially, China's aircraft state buying agency has not placed any new orders since 2017, although Airbus and Boeing have significant backlogs attributed to "undisclosed" customers.

Airbus had 600 narrowbody aircraft assigned to undisclosed customers at the end of March, all but 21 for re-engined A320neo-family variants. Its undisclosed customer backlog also features 39 widebodies, comprising five A330-300s, 10 A330-900neos and 24 A350s. The original equipment manufacturer (OEM) added another 20 undisclosed A320neos in March.

Boeing's "unidentified customer" orderbook comprises commitments for 1,071 aircraft, comprising 972 737 aircraft and 99 widebodies (71 787-family and 28 777-family aircraft).

The consensus in the industry is that these orders largely belong to Chinese airlines and leasing firms. But why have they not been officially posted? This is likely the result of global trade tensions after Donald Trump became US president. Airbus is just as affected.

Until an official truce is reached between Beijing and Washington, CAS is unlikely to reveal its hand.

Airbus declined to comment on details of its latest general terms agreement with CAS but left open the possibility that the order total contained gaps.

The agreement "creates the approval framework for aircraft ordered by Chinese airlines, be it existing orders or future orders," says Airbus. "The general terms agreement confirms the Chinese government's willingness to approve a certain number of aircraft purchases by Chinese airlines," adds the Toulouse-based OEM.

Sources tell *Airfinance Journal* that a portion of the 300 aircraft confirmed in March are still from the 2017 deal for 140 aircraft, while the order for 10 A350s was previously announced at the 2018 Farnborough air show as an order for all-Airbus operator Sichuan Airlines.

"Our expanding footprint in China demonstrates our lasting confidence in the Chinese market and our long-term commitment to China and our partners," Faury said at the signing ceremony.

That long-term commitment could soon include an A330neo final assembly line in Tianjin. The agenda here is obvious. Airbus believes that a local production facility will garner more orders from Chinese airlines, a strategy that paid off with the opening of an A320 final assembly line in Tianjin in 2009 and an A330 completion and delivery centre in 2017.

Airfinance Journal understands that discussions for an A330neo plant in Tianjin are ongoing, although a final decision may not be reached in 2019.

Airbus previously offered to build the A380 in China in exchange for orders from the country, but that pitch was rejected amid concerns the aircraft was too large, even for China's ravenous appetite for prestige and expansion. The smaller A330neo may be a much better fit, particularly as the A330-200 and -300 continue to be in demand by the Chinese, with Hainan Airlines and Hong Kong Airlines still taking delivery this year (liquidity permitting).

Building widebody aircraft in China would further boost Airbus's challenge to Boeing, which only opened a 737 Max completion centre in Zhoushan near Shanghai in December, about three months before the global 737 Max grounding order. Boeing has since announced a production rate cut to 42 from 52 aircraft a month, a 19% reduction and the lowest pace of output since June 2017.

According to the latest forecasts, China has a requirement for about 7,400 new passenger and freighter aircraft to 2037. This represents about 20% of the world total demand. Domestic Chinese routes will become the world's largest individual traffic flow segment, with traffic more than trebling over the next two decades.

South Korea – end of an era and an icon

The death of Korean Air chief executive officer, Cho Yang-ho, could ring in a new chapter in South Korean aviation. **Dominic Lalk** reports.

There has never been a shortage of controversy and scandal in South Korean aviation. Heather Cho Hyun-ah, heiress to Korean Air and Hanjin KAL, made sure the world learned about Korean entitlement – or customs as some may call it – when she ordered an Airbus A380 back to the gate at New York's JFK airport because she did not like the way she was served macadamia nuts in Korean Air first class. The elder Cho daughter was imprisoned for her "nut rage", but this was just the tip of the iceberg in a growing string of embarrassing revelations about the Cho family in specific and South Korea's dynastic chaebols (family-owned conglomerates) writ large.

In early April, Korean Air chief executive officer, Cho Yang-ho, unexpectedly died in Los Angeles. He was 70. The announcement of Cho senior's death rocked the industry: he was well liked and respected in some circles. Sources are suggesting he died of a chronic lung illness.

Cho's sudden death leaves a void at the airline, but it also represents an opportunity for Korean Air and KAL Hanjin to come clean and turn a page.

The onus will be on Cho's son and heir-apparent – Walter Cho Won-tae, Korean Air's president – to turn things around in the public eye. Korean society has made it abundantly clear that it is fed up with the dynastic chaebols which only care about lining their own pockets.

Cho junior will need to address and rectify the legacy of his father. After all, it was just two weeks before his death that Cho senior was voted off the Korean Air board after a tenure of 27 years when he failed to secure a minimum two-thirds of the votes.

Presumably, he lost the chairmanship because he was indicted in October 2018 on allegations that he embezzled W19.6 billion ($17 million) from the airline by awarding lucrative contracts to firms linked to his family and Hanjin KAL Group. The airline figurehead was also charged with breach of trust.

Cho directly owned 17.8% of Hanjin KAL, the holding firm which owns Korean Air. His


Cho Yang-ho

family together owns a 29% stake. With his death, a lot of questions remain about what this means for the airline and his shares in the company. There could be many positive outcomes but also a worst-case scenario: the notorious Cho sisters, Heather and Emily, running the airline.

Earlier this year, an activist fund increased its stake in Korean Air to about 13.5%, hoping to fix mismanagement at the company. This was a step in the right direction, but more needs to be done.

Cho Yang-ho was born on 8 March 1949 in Incheon. His father, Cho Choong-hoon, had founded the business empire which became the Hanjin Group in 1945, starting with a single truck. In 1969, he was chosen by Park Chung-hee, the country's then president, to privatise South Korea's flag carrier.

Airfinance Journal understands that Korean Air is due for an Airbus A330neo order this year. The A330neo will join the carrier's expanding fleet, which comprises 171 passenger and cargo aircraft, including 29 A330-200s and -300s.

Asiana Airlines joined the fray much later but quickly emerged as South Korea's second-largest airline with the backing of chaebol Kumho Group.

Asiana has had its fair share of scandals over the past decade, although it somehow managed to garner less public scorn and resentment than its bigger rival. This changed in late March when Samil PwC refused to sign off on the airline's accounting books over revenue-and-loss inconsistencies, forcing the resignation of airline co-chief executive and chairman of parent Kumho Asiana Group, Park Sam-koo. Asiana's shares were suspended from 22-25 March.

Park's departure has unlocked creditor support for a restructuring of heavily-indebted Asiana after two credit ratings agencies had warned the airline's total debt – W7.1 trillion as of 31 December – could be relegated to junk status.

Korea Development Bank (KDB) is Asiana's largest creditor. *Airfinance Journal* understands that KDB was instrumental in forcing Park's dismissal.

Samil PwC mandated Asiana to refile its 2018 accounting figures to include debt from aircraft leasing and revised values for equity stakes. Those changes reduced the declared operating profit to W28.2 billion from W88.7 billion. The Star Alliance member's net loss subsequently grew to W197.9 billion from W106.6 billion as a result and the airline's net debt rose to W7.1 trillion from W6.96 trillion.

After the restatement, Asiana's debt-to-equity ratio rather worryingly jumped to 649% from the previous level of 505%.

Asiana may not have any choice but to cancel or at least defer some aircraft deliveries. The carrier has seven additional A350-900s and nine A350-1000s on order from Airbus, in addition to 25 A321neo aircraft. The onus is on KDB to decide on Asiana's future and Airbus's backlog.

Troubles at Asiana and Korean Air aside, South Korea's skies are filling up quickly. In March, the Ministry of Land, Infrastructure and Transport approved licence applications from Air PREMIA, Aero K and Fly Gangwon paving the way for their respective air operator's certificates.

Hybrid Air PREMIA tells *Airfinance Journal* that it plans to operate 10 Boeing 787-9s "from a handful of lessors". Three aircraft are being sourced from Air Lease. Aero K and Fly Gangwon will be the other two low-cost carriers operating A320s and 737NGs

Ningxia Cargo aims for 50 freighters in five years

As the first cargo airline established in western China, Ningxia Cargo Airlines hopes to operate 50 Boeing freighters by 2024. Hongmei Liu, chief executive officer of the cargo operator, tells **Elsie Guan** about the company's strategic plans.

Ningxia Cargo Airlines (Ningxia Cargo), formerly known as Shaanxi International Freight Company – a Shaanxi state-owned logistic enterprise – was created in 2013 by the commerce department of Shaanxi province with investment from Shaanxi Xixian Aviation Industry Development Company.

With government support from Shaanxi province and Ningxia Autonomous Region located in northwestern China, the cargo operator will soon introduce another Shaanxi local strategic investor, says Hongmei Liu, chief executive officer of Ningxia Cargo.

The fledgling carrier hopes to acquire its first Boeing 737-300F in May 2019.

"If the strategic investor wants to develop cross-border cargo transportation under company strategies, we will embark on the 757 freighter introduction as a next step. If the investor decides to focus on the domestic market, we will continue to introduce 737-300Fs," says Liu.

Ningxia Cargo is expected to have three freighters in 2019, pending shareholder agreement. Although the type of aircraft has yet to be confirmed, Liu has been in talks with other carriers about leasing their second-hand aircraft. She says that direct leases from airlines will be the first and better choice for the cargo operator, compared with leasing aircraft from lessors, because Ningxia Cargo has reached preliminary cooperation intention of five aircraft sources with carrier(s), which could not be disclosed because of confidentiality.

Liu outlines the cargo operator's development plan for the next five years to *Airfinance Journal*. The airline plans an initial public offering (IPO) in 2022 with 26 freighters in its fleet. By 2024, the cargo operator will have 50 aircraft, comprising six 737-300Fs and 44 757Fs.

Ningxia Cargo will have double hubs in Yinchuan and Xi'An.

The International Air Transport Association says in a 2018 cargo strategy book that air cargo represents more than 35% of global trade by value. The cargo business generates 9% of airline revenues on average, representing more than double the revenues from the first-class segment.

"In the less-developed Chinese western region, there is an obvious shortage of air cargo transportation due to the lack of freighters."

Hongmei Liu, chief executive officer, Ningxia Cargo

The cargo operator has closed a landmark agreement with SF Express. The latter has committed to leasing the entire fleet of Ningxia Cargo to provide express delivery services for SF Airlines, a wholly owned cargo airline of SF Express.

"In the less-developed Chinese western region, there is an obvious shortage of air cargo transportation due to the lack of freighters," says Liu. "Therefore, Ningxia Cargo needs to cooperate with delivery services companies like SF Express to realise resource integration and reach a win-win objective, instead of maintaining a competitive relationship with them," she adds.

Shunyuan Financial Leasing, a wholly owned subsidiary of SF Airlines, delivered its first 767-300F in January. The lessor introduced the second-hand aircraft after a conversion from passenger-to-freighter configuration. According to *Airfinance Journal*'s Fleet Tracker, SF Airlines has 55 Boeing freighters in its fleet.

Amazon, Alibaba, eBay and other e-commerce companies rely on the express delivery services made possible by aviation to get goods and devices to their customers. One example is China's famous Tmall Single's Day created by Alibaba where in just one day, 11 November 2018, online shoppers bought goods worth $31.8 billion, representing more than one billion packages.

As the biggest former state-owned logistic enterprise in Shaanxi, Ningxia Cargo had its own logistic transportation network when it was founded, giving it advantages in the cargo supply chain. "In case of a shortage of our upstream cargo supply, we can use our own logistic network to avoid the risks of grounding freighters in the fleet," says Liu.

Ningxia Cargo is hopeful of getting its air operator's certificate (AOC) in December, after a lengthy process of nearly eight years awaiting various approvals from the Civil Aviation Administration of China (CAAC). Most e-commerce companies are unwilling to bear operating risks to wait so long for AOC approvals. Liu thinks Ningxia Cargo could tap opportunities to wet lease its aircraft to other e-commerce companies in the future.

Before joining Ningxia Cargo, Liu worked on car modification and automotive logistics in Shaanxi province. From car modification to freighter conversion, from automotive logistics to air cargo services, Liu not only took part in establishing the first cargo airline in western China, but also devoted herself to the transportation industry. "Although the transportation vehicle changes, there is still a ton of precious experiences for me to use as references," says Liu.

In China, the volume of air cargo transportation is still at a starting point when compared with the rest of the world. At the end of 2018, Chinese cargo airlines had 158 aircraft in operation, while American courier delivery services company FedEx had 398 freighters, just to cite one prominent example.

Liu says: "Chinese air cargo has a long way to go and I think there are many opportunities for us in this market."

Strategy for **staying ahead**

ICBC Leasing was ranked, at the end of 2018, as the largest Chinese lessor in terms of asset value. Qiang Li, its deputy chief executive officer, tells **Elsie Guan** how ICBC Leasing maintains its position as one of the world's leading lessors.

Established in 2007 as a wholly owned subsidiary of the Industrial and Commercial Bank of China (ICBC), ICBC Leasing has been one of the most important aviation industry participants not only in China, but worldwide.

According to *Airfinance Journal*'s 2018 Leasing Top 50, which gave rankings of the first 50 leasing companies, ICBC Leasing was ranked seventh in terms of beneficial owners by current market value of fleet, which was valued at $12 billion.

After more than 10 years' development, ICBC Leasing has recorded an overall asset valued at Rmb300 billion ($44.6 billion) from both domestic and overseas sections, becoming the largest Chinese lessor in terms of asset value. As of 28 February, the lessor had 668 owned and managed aircraft in its fleet, of which 385 had been delivered to 85 airline customers in 38 countries.

On 28 March 2018, ICBC Leasing officially launched its Hong Kong leasing platform, with a registered capital of Rmb8 billion. The platform is officially called ICBC Aviation Leasing.

ICBC Aviation Leasing has served as a marketing arm in the Asia-Pacific region for ICBC Leasing by providing financing services.

"ICBC Leasing is expected to make the most use of the aviation leasing subsidiary and a favourable environment in aviation finance, law and taxation provided by Hong Kong to lay out the global business under supports of its parent company and worldwide branches," says Li.

In 2018, ICBC Leasing delivered 67 aircraft to customers, a 60% increase over the previous year. Of those, the lessor delivered 38 aircraft to customers via Dongjiang Free Trade Port Zone (DFTP), representing 56.7% of the overall aircraft deliveries.

On 15 December 2018, ICBC Leasing took delivery of a Boeing 737 Max 8 aircraft for Air China. This was the first finance lease transaction closed by Boeing's Zhoushan delivery centre and an ICBC Leasing special purpose vehicle in Zhoushan, Zhejiang Province.

In November 2018, Turkish Airlines financed a new 777-200LRF delivery with Crédit Agricole Corporate and Investment Bank and ICBC Aviation Leasing under a French tax lease combined with a commercial debt financing. It marked the first French lease financing embedded with a leasing company. "By making an innovative financing product, ICBC Leasing is on its way to deliver more aircraft to Belt & Road [B&R]-designated countries," says Li.

The lessor has cooperated with B&R-designated countries, including South Korea, India, Indonesia, Laos, Nepal, Thailand, Malaysia, Vietnam, United Arab Emirates, Madagascar, Tanzania and Hungary. Li says that with support from its parent bank, ICBC Leasing also maintains a relationship with policy banks in B&R-designated countries, cooperating with these financial institutions to strengthen its position in the Asia-Pacific region.

Li joined ICBC Leasing in May 2017 as deputy chief executive officer. He previously worked in the risk management department at ICBC headquarters.

"Absorbing bad assets and improving abilities of risk management and asset management is vital to every lessor," says Li.

From his point of view, risk management includes different aspects: how to strengthen to monitor and provide early warnings for projects with high risks, how to improve abilities of emergency treatments for risks and how to optimise the mechanism of decision-making and management structure.

Besides risk management, strategic key points for ICBC Leasing as a part of the company's development plan for the next three years are to increase consolidated profit margin and improve the aircraft marketing ability and pricing management. Li also points out that the lessor is keen to explore new products and markets and facilitate asset appreciation under the entire period from aircraft purchasing to aircraft remarketing.

"Last but not least, ICBC Leasing and its parent company, ICBC, will work together in both internal management and external business exploration, to keep ICBC Leasing as one of the leading Chinese lessors," says Li.

Second-hand aircraft management and remarketing is a major concern for many Chinese lessors. ICBC Leasing says it focuses constantly on both aspects. There is a Chinese slang saying that "the early bird catches the worm", says Li, which is suitable for the company's second-hand aircraft strategy: making remarketing plans prior to the deadline of aircraft lease term.

In 2018, ICBC Leasing closed a sale and leaseback transaction for two ARJ21s with Chengdu Airlines. The two aircraft delivered on 24 August and 21 September 2018. The transaction was not only a good example of executing lease deals with the Chinese-manufactured aircraft, but also provided an air finance solution for COMAC.

ICBC Leasing is among the largest Chinese lessors in terms of the number of Chinese-manufactured aircraft in its orderbook. In November 2016, it signed a project proposal with COMAC, aiming to establish cooperation covering marketing strategy, air finance solutions, aircraft manufacturing support and governmental policy research for COMAC aircraft.

Li says: "No matter the orderbook, cooperation with Chinese original equipment manufacturers [OEMs], aircraft lease or aircraft manufacturing, supporting Chinese-manufactured aircraft is always a strategic mission of ICBC Leasing since we are familiar with Chinese OEMs."

DVB deal takes MUFG to next level

The purchase of the German lender's aviation finance division is the latest overseas acquisition for Japan's biggest bank.

MUFG and its consolidated subsidiary, MUFG Bank, plan to complete the acquisition of DVB's aviation finance division in late summer, Phillip Hall, its managing director, head of structured finance office for EMEA, tells *Airfinance Journal*.

The asset purchase agreement, which was signed on 1 March, covers the entire aviation finance client lending portfolio, employees and other parts of the operating infrastructure.

Airfinance Journal reported in February that the acquisition of the aviation department of German lender DVB Bank would involve part of the business falling under the BOT Lease umbrella.

Hall confirms that transaction includes the acquisition of DVB's aviation investment management and asset management businesses, which will be transferred to a newly UK established subsidiary of BOT Lease, where those businesses will be held.

BOT Lease is an operating lease company owned 30% by MUFG. Its other shareholders include Toyota Tsusho, Mitsubishi UFJ Research and Consulting, Ryobi, Tokyo Credit Services, and Mitsubishi UFJ Trust and Banking.

The BOT Lease involvement is largely regulatory though.

"There were some regulatory and legal-type issues," says Hall. "It was more about structuring a deal which would enable us to legally hold the division as a whole, rather than picking one or two aspects of it.

"We were keen on the whole platform, not only the asset and lending sides, but we definitely wanted to acquire the investment management and asset management side. It was a question of trying to find a solution where we can keep the platform as complete as we possibly could," he adds.

Growth pillar

Aviation finance is a growth pillar for MUFG, and the DVB acquisition will take the Japanese lender to another level. Many aspects of the DVB team give an edge to MUFG.

"We have an origination and lending capability and DVB will complement our offering," says Hall.

"We are strong in the ABS [asset-backed securities] market in the USA but we are keen to get their expertise on topics like relations with the OEMs [original equipment manufacturers], engines etc… Whilst there are some similarities in the origination activity other than that, there are areas where DVB is stronger and other areas where MUFG is stronger. Bringing the two together will be powerful for our clients."

He adds: "We don't currently have the investment management and asset management aspects, so while these are new businesses to us, we can see how beneficial they are to the overall platform."

DVB also brings a dedicated research capability.

"Whilst we have research, we don't have dedicated aviation research, so that is going to complement very nicely. Given the overall nature of DVB as a boutique transportation bank, it has a specific credit focus and a number of aviation credit experts."

Within its broader structured finance business – which includes project finance activities – MUFG has an advisory capability. But Hall says the DVB dedicated sector advisory team is going to help to complement what the bank has in place.

DVB has a number of personnel scattered around the globe in locations where MUFG has a presence. "There are no issues there; it is a question of sorting out the logistics and office space. There is no need for us to establish new office locations as part of the acquisition," says Hall.

He adds that the details are being worked through with the intention of closing the transaction in the second half of this year.

"More realistically, we're aiming for the late summer, and the plan is very much to try to integrate the new team during the course of this year," he says.

MUFG hired Bertrand Grabowski, a former member of the board of managing directors of DVB Bank, as one of its advisers, and the bank has benefited from his knowledge of the aviation business at the German lender. He had held this role since 2005 and assumed responsibility for DVB's aviation finance division.

"From our perspective, Bertrand was a good adviser to have on board. He helped us to get our thoughts in the right place in terms of what kind of platform we were looking to acquire."

In 2015, DZ Bank held talks with MUFG about the sale of the whole DVB Bank but no deal materialised.

"When we became aware of the sale of the aviation business, MUFG was more interested in the acquisition", says Hall.

DZ Bank approached the market for the sale of its aviation and rail divisions in November 2017 and initially looked at signing off the sale of its aviation unit by the end of last year.

Hall says the three-month delay is not uncommon. "This is a complicated deal and we worked flat out on it. But these things always take longer than everybody might like," he adds.

Overseas investments

The deal is the latest for Japan's biggest bank in a spate of acquisitions abroad as it seeks to make up for low returns in a country that is beset by rock-bottom interest rates and slow economic growth.

"The bank has been looking to expand overseas partly because domestically Japan is not performing as well as everyone might like," says Hall. "This transaction will be our first aviation acquisition at MUFG Bank. We have a number of strategic investments across Asia."

In 2010, MUFG did a large acquisition for a project finance portfolio from Royal Bank of Scotland.

"We bought a big pool of assets in much the same way as the DVB transaction. That really catapulted the bank's project finance capabilities to the top of the league tables. I can see a similar strategy behind the aviation platform: acquire a good platform, assets, people, research, credit, etc… and continue to transform our aviation business," he says.

MUFG is not looking at emulating the SMBC model of having a bank as lender and lessor.

Hall says: "I don't think we are in a position to know what may lie on the horizon. But we are not looking to emulate the SMBC model. We are comfortable with the route we are taking and need our own arrangement, as SMBC does. We would like to continue to support all of our airline and lessor clients."

Fly Leasing focuses on AirAsia transaction

Fly Leasing is lowering its leverage and customer concentration by intergrating 21 new-technology A320s into the portfolio this year, chief executive Colm Barrington tells *Airfinance Journal*.

Executing the acquisition of 54 Airbus A320 and A320neo aircraft from the AirAsia group has been Fly Leasing's major project over the past year.

The lessor's chief executive officer, Colm Barrington, reports a smooth completion of the first phase of the acquisition of an initial portfolio of 33 used A320s and seven engines on lease to AirAsia group airlines. This phase was completed in the fourth quarter of last year.

"We are slightly over 20% overall exposure to AirAsia group airlines and we would like to reduce this exposure somewhat, particularly as we start to take delivery of the first of 21 new A320neo family aircraft leased to AirAsia group airlines," he tells *Airfinance Journal* in an interview.

> *We're way ahead of our targets in deleveraging following the portfolio acquisition we did last year.*
>
> **Colm Barrington**, chief executive officer, FLY Leasing

At the same time, Fly is deleveraging and has set a target towards a 3.5/1 ratio.

"We're way ahead of our targets in deleveraging following the portfolio acquisition and we expect to be down very close, all else being equal, to three times by the end of the year," says Barrington.

As a result, the lessor has financial capacity ahead of what it previously anticipated as well as a $50 million share repurchase programme in operation.

Fly started to sell some of the AirAsia aircraft in December 2018.

"We found good appetite in the market for AirAsia arlines' credit because of the quality of the aircraft and the lessees and because the group did not have many aircraft under operating leases before. There was a good appetite from other lessors.

"Our published plan is to sell $150 million-worth of exposure per year. With these aircraft, at six or seven years of age and worth about $30 million each, about five aircraft per year would meet that objective. We hope to meet our first two years' sales targets, and to meet our leverage targets, during the course of this year," adds Barrington.

Towards the end of 2019, Fly will also start the second phase of the AirAsia project, with the first new-technology aircraft to be acquired under purchase and leaseback transactions.

Barrington says there are no funding requirements for the first several deliveries.

"We have two unsecured facilities with long-term maturities. We also have a warehouse facility and so we don't need to go to the banking market for those deliveries. Obviously, we will look at all options as the deliveries get closer. Reducing Fly's funding costs remains one of our main priorities."

The lessor has a disciplined financing strategy, which is substantially based on long-term and amortising secured debt. Its current average financing terms of 5.3 years broadly matches its average lease terms.

The financing structure isolates Fly from the volatility of the capital markets and the need to refinance large tranches of debt at times when the capital markets may be dry.

The lessor has no significant refinancing requirements until 2021, when $325 million-worth of unsecured notes are maturing. These notes represent only 9% of its total capitalisation.

As part of the transaction, Fly also acquired options to purchase up to 20 A320neo-family aircraft from AirAsia that would deliver between 2020 and 2025. The optional aircraft have no defined terms and they may be leased to AirAsia or third-party airlines.

As in 2018, Fly will see limited acquisition activity early this year outside the AirAsia deal as it focuses on deleveraging, and it will take until mid-2019 before the lessor is ready to make any significant additional acquisitions.

Asked if the lessor could pursue a similar project with Boeing 737 Max aircraft, Barrington leaves the door open.

"We have two Max aircraft already and not withstanding recent events, we expect to increase our exposure to that asset in the future," he says.

Barrington recalls that before the AirAsia deal, Fly Leasing's portfolio was heavily weighted towards Boeing.

"Our Boeing exposure is still slightly ahead of Airbus assets in our portfolio. But for the future it all depends on each aircraft type's acceptance by the marketplace," he says.

"Is the A320 a more popular aircraft than the 737 or vice versa? I am more interested in how many airlines operate each type. When we acquire aircraft we go for the most popular aircraft with the airlines – our customers," he adds.

> *"For the three aircraft sales we announced in the third quarter of last year, we booked a 19% premium to book value. We will not always meet that number but if we get 10% premium to book values, we will be fine."*
>
> **Colm Barrington**, chief executive officer, FLY Leasing

Fly also aims to have its portfolio comprised of up to 20% widebodies. "It is 27% at the moment but as we start taking A320neos we will have more capacity to take more widebodies."

Barrington stresses that Fly will not deviate from this approach. "We tend to stick to popular aircraft. The CSeries [Airbus A220], for instance, seems to be a fantastic aircraft but there aren't enough orders yet… and we have a golden rule of not competing with OEMs [original equipment manufacturers]."

The AirAsia transaction was very beneficial to Fly and its ability to grow. "If we found another opportunity like that we'd like to do it. We do see a couple of opportunities in the market that have similar characteristics, so we're exploring those," he says.

The current environment of low monthly lease-rate factors (LRFs) makes activity challenging.

"The sale and leaseback market is very competitive. People are offering crazy rates to difficult credits. In recent months it may have improved marginally in terms of lease rate factors, as not as much capital is chasing those deals. But you cannot expect to make money on deals when you get a 0.6% monthly LRF," he says.

Barrington insists Fly is fortunate not to have a speculative orderbook with the OEMs, and he observes better lease rates for used mid-life aircraft.

> *"The sale and leaseback market is very competitive. People are offering crazy rates to difficult credits."*
>
> **Colm Barrington**, chief executive officer, FLY Leasing

As it starts to take delivery of new aircraft this year, the lessor will continue selling older aircraft to drop its portfolio's fleet average age.

"The fact that we have been very conservative in buying aircraft is reflected in the gains from our sales. For the three aircraft sales we announced in the third quarter of last year, we booked a 19% premium to book value. We will not always meet that number but if we get 10% premium to book values, we will be fine," he says.

The lessor sold three older aircraft in the fourth quarter of last year, generating a total sales gain of $7.9 million.

Fly has consistently sold aircraft from this portfolio and mainly older aircraft add gains to book value. "We expect to continue to do this in the future, demonstrating the hidden value in our portfolio," he says.

Last December the lessor announced an agreement to sell a portfolio of 12 aircraft. The transfer of the last of those aircraft was completed in early April. These sales, along with nine additional aircraft sales, are expected to contribute to the lessor's results in the first half of 2019.

This year Fly also plans to divest six older aircraft from its fleet, all in the fourth quarter. Two of them are A340-600s, which will go for part out. Two are A319s and the remaining two are 737-700s.

Barrington says Fly has a young fleet of more than 100 attractive aircraft on long leases. It had a few issues with the two A340s but that these were essentially accounting issues, not commercial ones.

"We acquired the A340s through the 47 aircraft GAAM [Global Aviation Asset Management] portfolio some years ago and in our acquisition analysis we valued the aircraft at the present value of the rentals plus the scrap value of the engines at the end of their leases. However, once the deal closed, our external accountants upped the aircraft values to their appraised values. As the appraised values shot down for A340s, which we had anticipated, we had to take impairments on those two aircraft. That was a one-off situation resulting from GAAP accounting," he says.

Barrington adds that the lessor has since extended the A340 leases and will largely recoup the booked losses on the aircraft, which represent about 1% of its portfolio value when the aircraft exit the lessor at year end.

Fly has also two 757s remaining in its fleet again representing about 1% of its portfolio value, and which are now being sold. "We wish we had more 757s as it has been a good type for us. We have sold most of our 757s to package freighter operators," he says.

Time for a **shake up**

Prof David Yu, Istat-certified aviation appraiser, looks into the wholesale changes coming in the Chinese leasing landscape.

The increase in China-owned operating lessors and the growth of the Chinese airline market has been significant since the restart of the leasing sector in 2006, bolstered by the enactment of legislation allowing for bank-owned leasing companies.

These foundation lessors had the good fortune of timing, starting business in and around 2008 at a low point in the aviation cycle post the great financial crisis. While these firms are broader asset leasing companies, aircraft leasing represents a very large percentage of their overall portfolios.

In *Airfinance Journal*'s 2018 Leasing Top 50, Chinese-owned lessors represented two out of the top 10 and overall 12 out of the top 50 by number of aircraft, which represented 23.4% of the top 50 compared with none in 2007. Ranking by market value shows similar results with 11 places in the top 50, representing 25.3% of the top 50 aggregate values.

According to my research, the latest figures show that there are 89 lessor companies with at least one aircraft under lease, registered onshore. While that is a large number, from my conversations there is more potential for new entrants to the space, comprising of mostly of large conglomerates, both state-owned enterprises and private companies.

Some of the reasons given for not entering are the shortage of locally or former patriot skilled labour, technical understanding, perceived lower market returns and ultimately trust given the large asset sizes.

While there is a large onshore lessor presence, the number of parties with offshore subsidiaries (mostly in Ireland, Singapore and now Hong Kong) has grown and they can more readily access the international markets and trade assets. It is limited mostly to the bigger players. There are many Chinese policies that are promoting this increased presence abroad, including the Belt and Road and Made in China 2025 initiatives, among others.

There are challenges to more internationalisation. One particular issue is the availability and ease of accessing foreign exchange because these assets are predominantly dollar based.

> *“In Airfinance Journal's 2018 Leasing Top 50, Chinese-owned lessors represented 23.4% of the top 50 by number of aircraft compared with none in 2007.”*

Domestic policies to increase business efficiencies such as decreasing the overall debt burden, especially at the local and provincial levels, is a positive development but might cause short-term liquidity pains creating a balancing act as overall growth slows domestically. Other policies such as the creation of potential industry national champions through consolidation, such as in shipping, are bound to affect leasing at some point as well. The recent implementation of global and local accounting rules causing leasing assets to be brought on balance sheet instead of traditional off-balance-sheet treatment will also cause some dislocation.

Of course, there are not just internal policies affecting these trends but also global and regional issues such as the current US-China trade negotiations, and general cross-border investment receptivity in the other regions such as the EU and Asean (Association of Southeast Asian Nations) will have immediate and longer impacts as well. These are just some of the drivers, which will be discussed in more depth in my other working papers.

With the emergence of large numbers of lessors in China, local (and global) airlines have had more bargaining power but this is not forever. Not just sale and leaseback transactions but more seriously is the issue of large speculative orders by lessors.

There are not many choices for those burdened by near-term deliveries, because the highly competitive market is driving down terms and rates, which results in deals that are highly dependent on the back-end residual values and on the terms of the second lease. The competitive current situation is yielding many deals with returns of about 4% after leverage, which is unsustainable unless the cost of capital is near 0%, creating a risky proposition for lessors which have thin margins throughout their portfolios. These factors have contributed to the global aircraft market just recently turning, which was written about last year. This turn has been especially acute in Europe and for mid-life and older assets.

Even with all the challenges, this continued intense competition onshore will have the following results:

- continued spillover effects forcing lessors to setup and expand internationally for access to additional markets;
- de-risking; and
- market consolidation along with mergers and acquisitions.

The process of expansion takes significant efforts and approvals, which not all parties are able to achieve. De-risking such as selling to public investors through asset-backed securitisation transactions done internationally has not caught on onshore compared with other asset classes. With such low overall returns, there is not much cushion for exogenous and idiosyncratic shocks that might occur such as interest rates, fuel or others that are of the causes for recent European airline bankruptcies.

Reorganisation of the market is quickly around the corner with the recent HNA 30% sale of Avolon to Orix, and more lessors are available for sale. The resulting consolidation is overall net positive for the market and its long-term players, because increasing concentration among fewer players left will hopefully bring a more sustainable market return risk prospects.

The key is orderly processes assuming two or more willing parties involved and it is not because of more dire situations where regulators play a bigger role in matchmaking. The long-term fundamentals are still good, which bodes well for the industry but intermediate corrections through the business and economic cycles are not necessarily bad things.

All opinions expressed are the author's own. The author is contributing editor and Adjunct Professor of Finance at New York University Shanghai, where he teaches and focuses on cross-border investing, financing and real assets. He is also managing director of Inception Aviation, Istat-certified aviation appraiser. David Yu can be reached for comments or suggestions at* **david.yu@nyu.edu *and twitter* **@david_yuda**.

Vietnam: the next aviation **powerhouse**

Vietnam is one of the fastest-growing aviation markets globally. Opportunities for aircraft manufacturers, lessors and the supporting industries are bountiful. **Dominic Lalk** reports.

Vietnam is on a fast trajectory to becoming one of the global aviation powerhouses by 2037, the latest data from the International Air Transport Association (Iata) shows. Addressing the country's vast potential, Vietnamese airlines have their books filled with about 450 aircraft on order over the next 10 years.

The total number of passengers in Vietnam is expected to almost triple to 150 million by 2037, up from a forecast 100 million in 2028 and 58 million in 2018. This represents an average annual growth rate of 6.3%, versus 3.4% for the world on average and 4.7% in the Asia-Pacific over the same period.

The domestic market is particularly hot. Domestic passenger numbers are forecast to more than double to 60 million in 2028, up from 28 million in 2018.

Iata believes Vietnam will be the 19th-largest market in terms of total passengers in 2028, up from 23rd position as *Airfinance Journal* went to press. Only taking domestic into account, Vietnam is expected to be the ninth-largest market in 2028.

Drivers behind unprecedented growth

Vietnam's air transportation industry got a boost with the implementation of the Association of Southeast Asian Nations (Asean) open-skies policy in January 2015, allowing airlines to fly without restrictions throughout Asean.

Just as important, the emergence and proliferation of low-cost carriers (LCCs) in Vietnam some 10 years ago put the socialist republic on the aviation world map at last.

LCCs in Vietnam will account for about 60% of market share in 2019, which is much higher than the regional average of 35% and significantly higher than about 18% in Japan.

VietJet Air, a LCC which listed in 2017, has overtaken rival AirAsia in terms of market capitalisation. The $2.7 billion capitalisation is the second highest for a South-East Asian airline after marquee carrier Singapore Airlines ($8.75 billion). Meanwhile, AirAsia's market value stands at $2.2 billion.

> *"Vietnam's aviation industry is moving in the right direction. Clearly, the government sees the importance of facilitating the industry's growth and the economic benefits that it brings on the country."*
>
> **Conrad Clifford**, regional vice-president for Asia-Pacific, Iata

"The new entrants – Jetstar Pacific, VietJet and now Bamboo Airways – are LCCs that feel the market is not being served well by the established flag carrier. It looks like Vietnam is following the same patterns we have observed in Thailand and Malaysia over the past decade. And it makes sense as Vietnam has a young population and incomes are rising sharply, similar to what we've seen in other Asean countries previously," says David Yu, adjunct professor of finance at New York University's Shanghai campus.

Other key factors driving aviation growth in Vietnam are the country's booming tourism industry, which grew 19% for domestic passengers and 29% for foreign passengers last year, and Vietnam entering several free-trade agreements, which stimulates import, export and domestic consumption.

"Vietnam's aviation industry is moving in the right direction. Clearly, the government sees the importance of facilitating the industry's growth and the economic benefits that it brings on the country, although an area that we encourage Vietnam to review is the visa entry requirements. Relaxing the entry requirements can be a boost to travel to the country," Conrad Clifford, Iata's regional vice-president for Asia-Pacific, tells *Airfinance Journal*.

"Vietnam is a very interesting case in terms of how aviation plays a key role in social and economic development. It's still a relatively poor country with low per capita incomes and yet we've seen spectacular growth in demand for air travel," Association of Asia Pacific Airlines (AAPA) director-general, Andrew Herdman, says.

"Ho Chi Minh City-Hanoi is the fifth-busiest domestic route in the world now. I think this reflects the fact that ground transportation in the country is limited and air transport is by far the easiest way to get around and it's used by everybody now," says Herdman, who adds that attention must also be paid to the cargo sector.

"I remember the days when cargo out of Vietnam was basically limited to fresh produce and seafood. Nowadays, Vietnam is a very competitive manufacturing centre, not just for footwear and apparel but also consumer electronics like mobile phones. There are massive cargo infrastructure projects underway," says Herdman.

To meet the breakneck demand, the government in Hanoi last year revised the country's aviation industry development plan through 2030. Under the revised masterplan, the Civil Aviation Administration of Vietnam estimates that passenger traffic will reach 131 million by 2020 (up from 94 million in 2017) and 280 million a year by 2030. These numbers far exceed Iata's forecasts.

In the same vein, freight traffic is forecast to increase to 2.2 million tonnes with an average 18% growth a year through 2020. Some 10 years later, the cargo sector is estimated to handle 6.8 million tonnes of freight.

The only way for Vietnam to achieve these numbers is through unprecedented fleet growth driven largely by the country's sprawling LCCs. Nevertheless, rising interest rates could put a damper on growth.

"The low cost of capital has enabled ambitious start-ups to ramp up very quickly. Low interest rates have meant that aircraft financing has been an attractive investment. We've seen that through the growth of leasing companies here in the region. Also, these companies are ready to provide airlines with capital, even those with limited equity cushions," says Herdman.

"This environment has enabled even fledgling airlines to quickly ramp up, place big orders and scale up in ways that would have been difficult prior to the low interest rates we've seen over the last decade," he adds.

But what if the rates keep rising, a trend that has continued over the past 18 months? If you apply the stress test, if the interest rates rise, what do the operating economics look like for some of those carriers then?

"Many of them have limited equity, there hasn't been a lot of IPO [initial public offering] activity, so they're heavily geared. But so far they've bought at very competitive prices. Airbus and Boeing are still heavily backlogged. So even if the airlines can't use all the aircraft they've ordered themselves, the delivery slots can be transferred to other operators. This is acting as a kind of safety net in terms of whether people have over-ordered. Look at what Lion Group has done for example, selling or leasing out excess capacity that they bought at very good bulk rates," says Herdman.

VietJet Air

Although only in operation since late December 2011, low-cost carrier VietJet has snapped up 45% of the local market. The budget carrier will soon emerge as Vietnam's largest airline. It operates 64 aircraft, but has an impressive backlog of Airbus and Boeing narrowbodies in its orderbook.

VietJet was the first privately owned airline to be established in Vietnam. The carrier is owned by Sovico Holdings, HDBank, other organisational investors and its chief figurehead – president and chief executive officer, Nguyễn Thị Phương Thảo, Vietnam's first female billionaire with an estimated net worth of $4 billion.

Thảo met with early success while studying finance and economics in Moscow, where she began selling goods from Japan, Hong Kong and South Korea in the USSR. She owns several resorts, as well as a 90% stake in Ho Chi Minh City's Dragon City development.

In February 2017, VietJet completed its IPO and became a fully listed entity on the Ho Chi Minh City Stock Exchange (HOSE), making it the first airline in Vietnam to be listed on the bourse. BNP Paribas, Deutsche Bank and JP Morgan Chase were the IPO's joint global consultants.

VietJet's order backlog comprises about 110 Airbus A321neos, 20 Boeing 737 Max 8s, 80 737 Max 10s and 100 737 Max 200s. The Hanoi-based airline has previously flagged long-haul aspirations, although this has quieted down quite a bit after a local rival – Bamboo Airways – entered the playing field in 2018 with significant Airbus and Boeing orders, including 787-9 widebodies.

With 200 737 Max aircraft on order, VietJet is one of the top five customers for the programme.

"The deal for 200 Boeing 737 Max aircraft is an important move for us to keep up with our international flight network expansion plan with a higher capacity," Thao said at the latest signing ceremony in February.

"I believe that our fleet will have breakthroughs thanks to new-generation technologies, which helps improve flight quality and enhance operational reliability, while reducing operating costs in the future. Passengers will then have more opportunities to fly with reasonable fares," she adds.

In addition to massive aircraft purchases, Airbus and Boeing will partner with VietJet to enhance technical and engineering expertise, train pilots and technicians and improve management capabilities at the airline and in Vietnam.

VietJet offers more than 385 flights daily, carrying more than 65 million passengers, with 106 routes covering destinations across Vietnam, Japan, Hong Kong, Singapore, South Korea, Taiwan, China, Thailand, Myanmar, Malaysia and Cambodia. The airline has a Bangkok-based subsidiary, Thai VietJet Air.

VietJet has been adding new routes through codesharing with more established carriers, including marquee carriers Japan Airlines and Qatar Airways.

Vietnam Airlines

For decades, flag carrier Vietnam Airlines faced little to no competition. This changed rapidly with the arrival of VietJet.

State-controlled Vietnam Airlines is conscious that it needs to trim some fat and become more agile in its new operating environment. The carrier hopes to list on the HOSE by mid-year as the Hanoi government looks to reduce its stake to 51% from 86% by 2020.

The proceeds from the IPO are to be used to fund Vietnam Airlines' fleet expansion.

In 2016, Vietnam sold an 8.77% stake to ANAHD, owner of Japan's All Nippon Airways, in a $108 million transaction.

Vietnam's flag carrier also operates LCC Jetstar Pacific as a 70%-30% joint venture with Australia's Qantas Airways.

Vietnam Airlines' order backlog is easy to grasp. The flag carrier has outstanding commitments for 15 A321neos and eight 787-10s. These will join an existing fleet of 89 aircraft, comprising 57 A321s, five A321neos, two A330-200s (to be phased out within the first half), 14 A350-900s and 11 787-9s.

ICBC Aviation Leasing closed a Japanese operating lease with call option (Jolco) financing covering two Vietnam Airlines A321neo aircraft on operating lease at the end of 2018. The overall transaction was arranged by Asset Brok'Air International, while Société Générale-CIB acted as debt arranger, debt underwriter, facility agent and security trustee in the transaction.

The Hanoi-based carrier has also financed two of its A350 deliveries in the Jolco market, while the remaining 12 are under leases.

The state protégé needs to make order decisions soon if it wants to stay relevant in Vietnam's evermore crowded skies and not end up with a fleet size a mere fraction of VietJet's.

Vietnam Airlines could very well decide to keep its domestic and regional fleet at current levels (with VietJet and others picking up the surplus demand) in favour of more long-haul operations. With incomes rising and the US Federal Aviation Administration giving Vietnam a Category 1 rating at last, there are plenty of long-haul opportunities, especially with flights catering toward the large Vietnamese diaspora on the US west coast.

Earlier in 2019 Vietnam Airlines said that its current A350-900s and 787-9s did not have the legs to go nonstop to the US without payload restrictions, which makes the A350-900ULR and 777X programme the frontrunners ahead of an expected widebody order this year.

Bamboo Airways

Bamboo Airways will become Vietnam's third-largest carrier within the first five years of operations if its ambitious business plan is successful.

Before receiving Air Operator's Certificate (AOC) approval, Bamboo had signed to buy 24 A321neos. Airbus executive vice-president, Jean-François Laval, said at the time that Airbus would help expedite the airline's licence application processes and prioritise A321neo delivery slots in 2022-25.

It does not stop there. As *Airfinance Journal* went to press, Bamboo chairman, Trinh Van Quyet, had confirmed that the A321neo order would be increased to 50 units.

Bamboo got its AOC approved in early January and launched domestic service on eight routes with five leased aircraft, comprising four A320s and an A319.

CDB Aviation has signed a lease agreement with Bamboo for three new A320neos from "the second half of 2019". The CDB aviation deal is the first aircraft leased by the carrier and the lessor's first lease to an airline in Vietnam.

Perhaps more interestingly, Bamboo plans to launch widebody flights to the US late this year or in early 2020. In late February, it confirmed an order for 10 787-9s. This came after a 2018 memorandum of understanding (MoU) for 20 aircraft of the type.

Bamboo will be a hybrid carrier offering a mix of premium and budget fares on the same flight. It has announced plans to serve Asia and also long-haul routes to Europe and North America.

The biggest challenge to aviation development in Vietnam is infrastructure bottlenecks. The airports in Hanoi and Ho Chi Minh City are filling up quickly with slots and ramp space at a premium. Addressing the growing congestion, Bamboo said it would fly passengers directly to Quy Nhon, Quang Ninh, Haiphong, Thanh Hoa, Phu Quoc and Nha Trang, destinations where parent FLC Group operates hotels and resorts.

Jetstar Pacific

Founded as Pacific Airlines in 1990, Jetstar Pacific was the first LCC in Vietnam. In 2007, Qantas took a 30% stake and flag carrier Vietnam Airlines purchased the remainder in 2012.

Jetstar Pacific's fleet consists of 15 A320s. The budget carrier has not announced any fleet additions, and it is unlikely it will attempt to compete with the aggressive expansion of VietJet and Bamboo.

AirAsia Vietnam

LCC conglomerate AirAsia Group is planning to enter the market through a joint venture with Hai Au Aviation, a subsidiary of tour operator Thien Minh Group, to establish AirAsia Vietnam. The latest deal between the parties was struck in December 2018 and calls for the establishment of the new airline in the second half of 2019. AirAsia Group will hold a 30% stake in the joint venture (the maximum allowed under Vietnamese investment laws for a foreign entity).

If materialised, it is expected that AirAsia Vietnam will tap the group's impressive orderbook counting more than 400 A320-family aircraft and up to 100 A330-900neos.

Infrastructure requirements

The growth of Vietnam's airlines hinges on the country's ability to provide sufficient infrastructure.

Vietnam's Ministry of Transport has announced plans to spend $3.7 billion by 2020 and $15.4 billion by 2030 to develop 20 airports with a design capacity of 144 million passengers and 2.5 million tonnes of cargo a year by 2020. By 2030, plans call for 28 airports with a design capacity of 308 million passengers and 7.5 million tonnes of cargo a year.

"It is encouraging to hear of the government's plans to expand their airport infrastructure to eventually 28 airports with a handling capacity of over 300 million passengers and 7.5 million tonnes of cargo by 2030. The timely implementation of the airport masterplan is critical to ensure that the right infrastructure and capacity is available to support the expected growth. Already, the key gateways at Hanoi, Ho Chi Minh City and Da Nang are congested," says Iata's Clifford.

Airports Corporation of Vietnam (ACV) data shows that key airport development projects include upgrading and expanding Hanoi's Noi Bai airport (about $500 million) and Ho Chi Minh City's Tan Son Nhat airport (about $550 million). New airports are being built in Phan Thiet and Sapa, while Hai Phong, Hue and Quang Ngai are receiving new terminals.

The one project to trump them all is the under-construction new hub airport for Ho Chi Minh City – Long Thanh. ACV says investments of $4 billion were made in 2018 alone to build Long Thanh.

The new airport is expected to open in 2025 with one runway and a terminal capable of handling 25 million passengers and 1.2 million tonnes of cargo a year. In Phase 2, from 2035, the facility hopes to increase capacity to 50 million passengers and 1.5 million tonnes of cargo a year with two runways, followed by 100 million passengers and five million tonnes of cargo on five runways from 2050.

Long Thanh carries a price tag of $15.6 billion. Once operational, it hopes to compete with the traditional Asian transfer hubs in Singapore, Hong Kong and Bangkok.

No matter the angle, it is clear that Vietnam's aviation industry is gearing up for massive expansion. Aircraft manufacturers, leasing firms, lenders, arrangers and law firms should take note.

Transforming **aircraft finance**

Lory Kehoe, managing director, ConsenSys, says blockchain, as a technology, could be the "internet of value".

In the early days of the internet, evangelists endeavoured to convince people of its vast potential, against a backdrop of Luddites sceptical of its most basic capabilities. These individuals did not believe that information could be held on a server, but instead insisted that it would continue to be held on a CD-ROM or a floppy disk. How wrong they were! We think that blockchain has a great deal of equivalence to the internet in the mid-'90s.

What is blockchain?

Blockchain is a technology which effectively connects people or companies in a direct way or on a peer-to-peer basis. For the past 20 years, people have shared information through the internet. At ConsenSys, we believe that blockchain as a technology offers the "internet of value", so that people not only exchange information, but value from person to person, or on a peer-to-peer basis.

Using blockchain, we can now transfer ownership of a car, cast a vote in an election, or transfer a share certificate, without having to go through a third party such as a bank, a government or a stockbroker. What we have today in society are entities that own and control that transaction process, inserting themselves in the middle of it and typically charging a premium for this involvement.

It is important to note that there are two main blockchains in existence: one is the Bitcoin blockchain, on which Bitcoin famously operates; the other is operated on the Ethereum platform, which was created by ConsenSys founder Joe Lubin along with Vitalik Buterin and Gavin Wood. Effectively, Ethereum is a programmable blockchain which allows us to build multiple different uses and applications on Ethereum, offering more prolific and versatile capabilities than the Bitcoin blockchain.

Blockchain, as a technology, has the power to eliminate that centrality and decentralise the control of countless processes. That is what makes it disruptive and powerful as it challenges existing business models. Change is often feared but it is nonetheless inevitable. The internet taught us that. The key feature of blockchain is that anything that is stored on the blockchain is there forever, the information is immutable and it cannot be erased, making systems built on it tamper-proof.

This means that the information that is stored on the blockchain offers us a level of transparency that does not exist today in the modern world. It means that if I own something at a certain time, and when I transfer the ownership or value of it to you, there will be a record that I owned it on the blockchain. The technology is decentralised so the information is stored on a distributed ledger, and this means that not only do I have a copy of the data, but so does everyone else on the blockchain.

Blockchain is also described as a distributed ledger. In simple terms, this means that instead of all parties keeping one master ledger tracking all transactions and then having to reconcile different copies of the ledgers, we can get to a place where there is a shared ledger in the middle that records everyone who has access to the data. At ConsenSys, we see enormous potential for blockchain technology to transform the aircraft leasing industry.

Case examples in aircraft-leasing sector

A core feature of Ethereum or the programmable blockchain are smart contracts. Smart contracts are contracts that automatically self-execute when certain criteria are met, so a good way to think about that is using an example around aircraft leases. If you have a lease with an airline and the airline fails to honour a clause of the lease, or is late paying their rental, the smart contracts can automatically execute and impose penalties for late payment and or not honouring the terms of the contract.

There are countless applications of smart contracts, with potential use cases extending from the letter of intention stage, right through to contract extensions and terminations, all offering unprecedented efficiencies. Furthermore, there is an opportunity to streamline the aircraft parts tracking process, leading to enhanced efficiency and transparency. It is our view that the introduction of smart contracts into the sector could release countless hours of labour-intensive paperwork and allow legal and contract teams to focus on higher value work – less of the drudgery.

Blue sky leasing

Perhaps the biggest opportunity we see for the sector is around the tokenisation of aircraft. For context, tokenisation is the process of turning a physical or hard asset into a number of digital assets or tokens, as we call them. Essentially, a token is a hard asset-backed secured loan. Leading universities around the world are beginning to incorporate tokenisation into their economics modules and the concept is being written into economic textbooks.

Lory Kehoe, managing director, ConsenSys

The number of tokens that are created is decided on by the group conducting the deal. The number can range from single digits up to millions and beyond. The tokenisation process has already taken place in other industries such as real estate in New York City (Meridio, Fluidity) and art, with an Andy Warhol painting in the UK (Maecenas).

We believe, much like the real estate and art sectors, that tokenomics could be applied to aircraft. If a lessor was to create an aircraft leasing token platform where equity and debt tokens can be created, bought and sold, this would create a whole new pool of liquidity in the market. Essentially, for the pioneering lessor who would do this, there is an opportunity to own a new digital marketplace where aircraft are financed, bought and sold by not only global institutional lenders, but also retail investors. This we feel could be the first real innovation in terms of aircraft financing in the past 30 years, and there is an opportunity for an ambitious lessor to take the lead and perhaps become the Nasdaq of aircraft trading.

These are just some of the examples of how blockchain can revolutionise the aircraft financing industry and create unprecedented efficiencies. There are countless applications of blockchain technology being explored and deployed across numerous industries to rationalise operations and negate arduous transaction processes. The decision by the Aviation Working Group to build GATS on blockchain technology is a development we welcome. It marks an important first step for the transformation of the industry.

As in most industries, an investment in research and development is required to bring the power of this technology to the sector, but it is an investment that will yield great reward.

New order for ULCCs in Canada

The Canadian ultra-low-cost carrier market has attracted new operators aiming at providing disruption in an already challenging industry.

Like Argentina and Chile, which saw a new wave of low-cost carriers (LCCs) last year, Canada does not have that much of a population density. Furthermore, the new ultra-low-cost carriers (ULCCs) look at challenging the incumbent airlines: Air Canada and WestJet.

The Canadian ULCC market is still relatively untapped. But so was the low-cost market in the early 2000s in Canada when Jetsgo and CanJet provided competition for Air Canada.

Jetsgo, whose slogan was "pay a little, fly a lot", ceased operations in 2005. Established through the merger with Canada 3000, CanJet was rebranded as a LCC between 2002 and 2006 before operating charter flights. It eventually discontinued operations in 2015.

Zoom Airlines, although concentrating on low-fare transatlantic services, stopped operations in 2008 after six years of service, while Air Canada's discount airline, Zip, ceased flying in 2004 after two years of operations, returning its aircraft to the mainline operations.

The start of the Iraq War in 2003, the steep rise in oil prices, the Sars epidemic and the poor investment climate for airline projects all contributed to add pressures on the start-ups in the early 2000s.

The ULCC arrival will probably spark a price war. But can the likes of Canada Jetlines and Swoop succeed where Zoom Airlines, Zip, CanJet and Jetsgo have failed?

Jetlines' strategy is to target primarily unserved or underserviced catchment areas and secondary airports, flying point-to-point routes.

Swoop is designed to be "incremental" to the WestJet network rather than cannibalising it. The carrier, which was described by Ed Sims, the WestJet chief executive officer (CEO), as a "competitive weapon", is said to have a cost base 40% below the mainline carrier.

Canada Jetlines

Canada Jetlines has not had the best of starts. Although it has made public its plans since November 2013, the carrier missed the start of its operations in June last year because of a lack of aircraft.

"Jetlines is committed to becoming Canada's first true ultra-low-cost carrier. It's not fair for Canadians to have to consistently overpay for their air travel."

Javier Suarez, CEO, Jetlines

Over the past 12 months, Jetlines has appointed two ULCC veterans, one of whom, Javier Suarez, became CEO in September 2018.

It plans to start operations later this year with two 12-year-old Airbus A320s leased for six years from AerCap. The two committed A320s, which are expected in the first half of 2019, are sister aircraft, having virtually identical conformity in design, features and equipment, allowing Jetlines to expedite the necessary training and maintenance processes to commence operations.

According to its latest filing, the carrier has paid about $2.2 million in deposits for the aircraft. Its rental commitments are $5.1 million this year, and $5.9 million a year between 2020 and 2024. In 2025, its lease rental commitment is $1.2 million.

Jetlines initially looked at the Boeing 737-800 model to start operations and consequently signed a purchase agreement with Boeing for 21 737 Max aircraft in December 2014. The contract has now been terminated.

Jetlines issued late last year shares to fund its operations and secured $7.5 million additional funds from SmartLynx Airlines, the ACMI aircraft lease services provider in Europe for A320 models. SmartLynx also has the option exercisable for a period of 12 months to complete a second financing for variable voting shares for additional gross proceeds of up to $7.5 million.

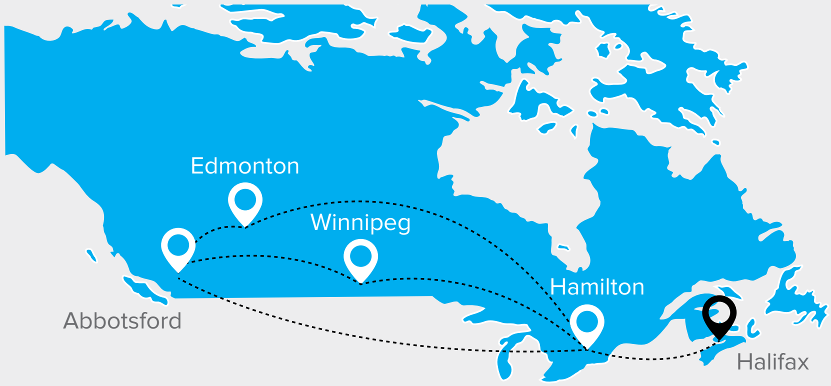
Jetlines recently entered into a letter of intent for a financing of up to $14 million with a Korean special purpose fund led and established by InHarv Partners. The offering consists of convertible debentures and 1,785.71 variable voting share purchase warrants for every $1,000 of principal of the debentures for gross proceeds of an initial tranche of $7 million. The SPV has the option to increase the total gross proceeds to up to $14 million. The offering carries a 10% interest rate and has a 36 month's tenor.

The timing of the launch of airline operations remains subject to the completion of its air operator certificate from Transport Canada. Jetlines now targets 17 December 2019 for launch of operations.

The carrier has recently unveiled Vancouver airport as its main base but has also announced plans from Montréal Saint-Hubert Longueuil airport to several destinations in Canada, including Québec City, as well as US destinations to Florida and New York.

Saint-Hubert is being expanded as part

Swooping into the Canadian market



Swoop's initial network 2018, with Halifax, Abbotsford, Winnipeg, Hamilton and Edmonton destinations

of a plan to position itself as a low-cost airport serving the Montérégie region of Québec and Montréal. The airport recently upgraded its runway, a project that received support from the federal government, which injected $13 million, while a new passenger terminal is planned.

"Our low fares should encourage people from Montréal and the surrounding areas to travel more often. Driven by these low fares, Montréal should experience an increase in the number of tourists and visitors it receives," says Suarez.

"Jetlines is committed to becoming Canada's first true ultra-low-cost carrier. It's not fair for Canadians to have to consistently overpay for their air travel, whether be it to travel for leisure, or to visit their friends and family. Jetlines is here to put an end to this," says Mark Morabito, the carrier's executive chairman.

Jetlines says it will use the proven commercial aviation ULCC profitability model in the USA (Allegiant Air and Spirit Airlines), Europe (Ryanair) to stimulate demand in Canada. The company is targeting a 40% reduction in costs below their nearest competitor, thereby creating new passenger demand by market stimulation.

Swoop

WestJet's Swoop started operations on 20 June 2018 with a pair of 737-800s configured with 189 seats in a single-class configuration.

WestJet placed Swoop's headquarters in Calgary to enable the new airline to share infrastructure and services with the parent company.

Bob Cummings, WestJet executive vice-president, strategy, said the name demonstrates how the carrier plans to "swoop in to the Canadian market with a new business model that will provide lower fares and greater opportunity for more Canadians to travel". About 60% of Swoop passengers are expected to be for leisure, 30% to visit family and friends and 10% for business.

The ULCC subsidiary of WestJet initially launched operations on domestic sectors connecting Abbotsford, Halifax, Hamilton, Edmonton and Winnipeg, taking over these routes from its parent company.

WestJet says it intends growing Swoop's network in a way that would not cannibalise the parent's operations.

Initially, Swoop deployed two 737-800s. A third unit was added last July and another in August. By the end of 2018, Swoop operated six aircraft. The initial target is to operate a fleet of 10 aircraft by November.

All 737-800s will be transferred to Swoop from WestJet – they were identified as excess capacity for the mainline carrier.

The new carrier launched international services in December. "We will look to continue to grow the Swoop network and we plan to launch exciting destinations in the transborder and international markets later this year," WestJet CEO Sims said at the time.

It has since expanded into the Mexican market but the carrier has also added five new domestic markets, two new transborder markets and an extension of two international routes.

"The summer 2019 schedule focuses on realising economies of scale," says Swoop's president, Steven Greenway. "We have created a schedule that leverages our existing network while expanding to a limited number of strategic destinations."

The carrier plans to reach C$6 cents ($4.6 cents) per cost per available seat-mile (CASK) this year. WestJet's CASK in the third quarter of last year was C$10 cents.

WestJet's group of airlines plans between 6.5% and 8.5% capacity growth in 2019, with only 1% to 3% domestically.

Flair Airlines

On the day that Swoop took to the skies (20 June 2018) Flair Airlines said it welcomed competition from other airlines in Canada. "The carrier aims to fill a void left by Air Canada and WestJet," commented David Tait, Flair's executive chairman at the time.

"What this country has needed in this area is competition for years," adding: "It's a question of keep being a thorn in the side of your competition and leveraging that smallness, so we're very excited about what we can do in this country, and flying south of the border as well."

Flair Airlines has been around since 2005, mainly as a charter carrier.

After its rebranding and change of business model to an ULCC in late 2017, Flair appointed Jim Scott, the former Jetlines chief executive officer, as CEO in January 2018. He was joined by Jerry Presley, the company's new executive board chairman, who represents a private group of investors which holds a majority stake in the carrier, after Flair's former president, Jim Rogers, sold his shares. The change of ownership was announced six months after the purchase of the assets of NewLeaf Travel, the ticket reseller of flights operated by Flair, in June 2017.

As part of the changes, Kelowna-based Flair announced Edmonton airport as the discount flyer's new main transfer hub, saying it settled on Edmonton because of the airline's popularity in the city and the growth potential it sees at the airport.

But Flair also deviated from its strategy by starting services from major airports, rather than staying put with secondary airports. In December 2017, it added

Toronto Pearson and Vancouver to its list of destinations. The carrier is seen as tapping into a larger crowd at those cities, especially in the off-peak season. This will also translate into higher landing fees.

One area where Flair may have an advantage is fleet costs. The carrier purchased two 737-400 aircraft in autumn 2017 and now operates seven aircraft of the type equipped with 156 seats.

It upgraded to the larger 737-800 model for the 2018/19 winter season and operates three aircraft of the type under lease agreements.

In 2019, Flair expects to add four more Boeing aircraft to accommodate the nearly 1.5 million ULCC passengers it forecasts this year.

Race to the South

The Canadian ULCCs will try to stimulate demand among people who do not fly regularly but it seems inevitable that they will rapidly pursue the hefty cross-border markets, especially to sunny destinations in the USA and Mexico.

Swoop became the first Canadian ULCC to announce flights to the USA, in August 2018. The carrier initially served US destinations connecting Hamilton to Phoenix-Mesa, Fort Lauderdale, Orlando and Tampa.

It also consolidated its position in the US market with services from Edmonton, Alberta; Hamilton, Ontario; and Abbotsford, British Columbia.

Interestingly, WestJet has terminated a nonstop service between Edmonton and Las Vegas, opting to offer flights via Vancouver, Calgary or Winnipeg instead.

Flair Airlines also announced services to the USA in the final quarter of last year with three scheduled destinations this winter: Las Vegas, Mesa and Orlando.

Swoop then became the first ULCC to open the Mexican market. Last October it announced service into Mexico with the addition of four new routes serving the cities of Cancún, Mazatlán and Puerto Vallarta from its Abbotsford and Hamilton bases starting in January.

"Mexico continues to flourish as one of the most popular vacation destinations for Canadians," says Greenway. "Combining Swoop's ultra-low fare with the favourable exchange between the dollar and peso makes the value proposition of exploring Mexico enticing for families and budget travellers alike," he adds.

FlyToo

FlyToo is a temporary placeholder name by parent company Enerjet, a Calgary-based charter airline. Tim Morgan, one of WestJet's founders, has been working to turn Enerjet into an ULCC for a number of years. It has run into trouble raising sufficient funds to get off the ground. Darcy Morgan, the chief commercial officer and brother of Tim, says that Enerjet tried on three different occasions to raise funds. "We were always able to raise some money," he adds, "but not enough to de-risk the project."

"We believe there are millions of Canadians who would jump at the chance to have a simple, safe and affordable alternative to the sky-high costs of air travel."

Tim Morgan, founder, WestJet

The shift in foreign ownership rules for new airline entrants in 2017 helped the search for cash, and Tim Morgan says there is smart money behind his proposed ULCC.

However, while Enerjet got a green light to bring in more foreign money, there are other regulatory considerations the Canadian Transport Agency is weighing — whether the foreign investment leaves Enerjet under what is called Canadian "control in fact". The issue is whether, with the foreign money in place, FlyToo's day-to-day operations and strategy will still be controlled by Canadians.

Enerjet stopped operating its charter business in anticipation of launching its ULCC model, hence the anxiety to get off the ground. But, in late December, an investor group led by Tim Morgan, announced the launch of ULCC service this year. Backed by significant financial commitments from a consortium of Canadian investors and Indigo Partners, a leading private equity firm specialising in the aviation industry, Enerjet is to be rebranded.

"We believe there are millions of Canadians who would jump at the chance to have a simple, safe and affordable alternative to the sky-high costs of air travel," says Morgan. "We are extremely pleased to have the backing of leading Canadian investors and our partners at Indigo. Together, this group has the financial capacity, experience, and operating expertise to transform Enerjet into a world-class, ultra-low-cost airline that will bring increased choice and competition to the Canadian market."

The move marks the penetration into the Canadian market by Indigo Partners, which has several investments in South America and Europe.

"We believe we can significantly increase the size and competitiveness of Canada's domestic and transborder aviation market by offering an ultra-low-cost alternative to the high cost of air travel," says Bill Franke, Indigo's managing partner.

Incumbent response

The new entrants believe there is a space for the ULCC model in Canada but WestJet and Air Canada have the financial muscle to subsidise their low-cost arms.

They also plan to go after a small piece of the market for Air Canada and WestJet leisure travellers.

WestJet's response to the ULCC threat in Canada is Swoop. Air Canada launched leisure low-cost division Rouge in 2013.

Air Canada says Rouge pursues a long-term cost structure consistent with that of its leisure market competitors, effectively lowering costs per available seat-mile (CASM) on leisure routes through increased seat density, lower wage rates, more efficient work standards and reduced overhead costs. This is yielding enhanced margins and providing new opportunities for profitable growth in international leisure markets.

The Air Canada Rouge fleet is estimated to generate 25% lower CASM compared with the same aircraft in the mainline fleet.

Air Canada continues to upgauge the size of its Rouge fleet. It has added four aircraft in the first half of this year to reach 53 units. It may have 56 aircraft – 31 narrowbodies and 25 767s – by the end of next year.

The battle for the Canadian skies is underway and the success of the ULCCs will heavily depend on how attractive they are for the new travellers. To survive, support from their investors will be key.

ULCCs may stimulate markets but there may be not be space for four airlines. Regardless, this is an exciting time for Canadian travellers.

Air Vanuatu enjoys its moment of fame

Vanuatu is remote, very remote. With four hours of flight to the next hub airport, the island nation is one of the more difficult places to reach. Air Vanuatu's chief executive officer, Derek Nice, tells **Dominic Lalk** what this means for the airline's operations and the way ahead.

Air Vanuatu made the global headlines for the first time in its 38-year history when it placed its first aircraft order with Airbus in February. The order for four Airbus A220s was signed at the Avalon air show by the prime minister of the Republic of Vanuatu, Charlot Salwai Tabimasmas, and chairman of the Air Vanuatu board of directors, Joel Lengsau.

And it may not stop there.

In an exclusive interview with *Airfinance Journal*, Air Vanuatu chief executive officer (CEO), Derek Nice, confirms that the airline has signed purchase rights for four additional A220 aircraft, which it will exercise pending market conditions. "You have to keep in mind that once we've taken delivery of all the aircraft that this is probably the largest financial transaction the country has ever done," he says. "Our shareholders are very passionate about the airline, so they end up being very heavily involved – in particular, in making sure that we offer the right level of customer service and that complaints we get will be looked after," he chuckles.

The seasoned airline leader says that small Air Vanuatu has been surprised by the attention the Airbus order created. "For a very small airline in a very isolated part of the world I think we've been a bit overwhelmed by the attention we've been getting from around the globe – and even from Airbus. We have people from Airbus here right now. It certainly takes a lot of management's time and attention," admits Nice.

Ordering brand new Airbus aircraft indeed is a giant leap for an airline which has previously relied on leased capacity to serve regional destinations at low frequency. After all, Air Vanuatu's current fleet only comprises a Boeing 737-800, an ATR72-600, three Bombardier Dash 6-300s and one Britten-Norman BN-2 Islander.

The strategy behind the A220 order is simple. Vanuatu hopes to increase its tourism arrivals to 450,000 visitors a year by 2030, up from 110,000 in 2018. The flag carrier will be instrumental in achieving this goal, says Nice.

"The first step was the recognition here by the authorities in Vanuatu that the country needs to be more proactive in developing its air transportation and tourism industries. But, of course, we need to make sure that all stakeholders are aligned in this plan, including airport infrastructure and sufficient hotel rooms," he adds.

"Air Vanuatu needs to grow. We need to do things. But in which ways do we need to grow? We need to be doing a better job at serving our traditional core markets of Australia and New Zealand. Secondly, we need to do a better job of meeting the growing demand from what we call emerging markets – Europe, Asia and North America. So that led us to realise that we'll need to be providing more connectivity through major hubs in the region, like Auckland, Brisbane, Sydney and perhaps Melbourne as well," says Nice.

For Air Vanuatu, the focus is on frequency rather than capacity. Interestingly, Nice tells *Airfinance Journal* that even the 737-800 is too big an aircraft for the airline's current capacity requirements.

"Operating the 737-800 aircraft has been fantastic. It is a brilliant aircraft and we have nothing bad to say about the 737 whatsoever. However, for most of our markets the 737 is simply too big an aircraft," he says.

Air Vanuatu's 737-800 is in a dual class configuration seating 170 passengers, including eight up front. It leases that 2016-vintage aircraft from Air Lease.

"We recognise that we need to stimulate the market by offering more frequency and better connectivity. This is very difficult to do, however, when every time you have to put 170 seats on our typically long and thin routes each way. That led us to look at other opportunities," he explains.

"The A220 has very, very good economics and, frankly, Boeing does not offer a product in that seating category," he says, responding to whether the carrier had studied the Max 7, the smallest 737 Max-series aircraft.

"In terms of range, the A220 is at least as effective as the 737-800 but the trip costs are much, much lower. The A220 has the ability to allow us to increase frequencies on existing routes, to better make connections to our long-haul partners and to be able to start services to new markets," says Nice.

Air Vanuatu expects 20% lower per passenger operating costs on the A220 compared with its current 737-800 and ATR72 operations.

"Operating the Boeing 737-800 aircraft has been fantastic. It is a brilliant aircraft and we have nothing bad to say about the 737 whatsoever. However, for most of our markets the 737 is simply too big an aircraft."

Derek Nice, chief executive officer, Air Vanuatu

A220-family aircraft have been specifically designed for the 100- to 150-seat market and have more than 99% parts commonality, as well as the same pilot type rating. The A220 cargo hold boasts significantly higher usable volume than competing aircraft.

The A220-100 has a range of 5,460km (2,950 nautical miles), while the -300 can fly 5,920km (3,200nm).

Air Vanuatu has placed firm orders for two A220-100s and two A220-300s, as well as purchase rights for two additional -100s and -300s, respectively. The smaller aircraft will have 108 seats, the larger one 133 seats.

Earlier this year, Vanuatu's prime minister said that the flag carrier would require up to 13 aircraft by 2030, but Nice notes that "this number needs to be put it into perspective" because it includes the domestic fleet and replacement of the ATR72 on lease from Nordic Aviation Capital.

"The ATR72-600 will be replaced with the A220," he says. "The ATRs worked very well on the domestic network, but they did not work well on the regional network. We've been sending that aircraft to Nadi and Noumea but they are pretty long routes, especially to Fiji, which is an Etops [extended twin operations] route and we were facing payload restrictions. The economics are not that great."

Air Vanuatu operates seven international routes with daily flights from Sydney and four flights a week from Brisbane, including two direct flights to Espiritu-Santo.

As of 17 June, the national carrier will offer six flights a week from Auckland and three non-stop services from Melbourne.

Air Vanuatu's largest codeshare partner is Qantas Airways, but Nice tells *Airfinance Journal* that the airline is working on a codeshare agreement with Air New Zealand.

Other Air Vanuatu codeshare services include six and seven weekly flights, respectively, to New Caledonia and Fiji in partnership with Aircalin and Fiji Airways, with other connections to Port Moresby and Honiara operated by Air Niugini and Solomon Airlines.

"Right now, we have three international airports in the country. Our hub is in Port Vila, but we also have international services from Espiritu-Santo. Those two airports can take the A220. The third major airport, on the island of Tenna, is being upgraded so that it can handle jet engine aircraft, including the A220. They're currently installing lighting at that airport so that it can operate 24 hours a day. So when that is done we will be able to operate the Airbus aircraft into all three trunk airports," confirms Nice.

"The runway in Port Vila is being upgraded at the moment as part of a World Bank-funded project. That upgrade will be completed within the next few weeks. We're also doubling the size of the ramp to be able to accommodate up to five narrowbody aircraft at the same time. The runway is being resurfaced and strengthened," he adds.

Air Vanuatu's focus will remain on regional flights of two to four hours in the near and medium term. In the long term, the airline could be tempted to tap medium- and long-haul services.

"We are looking at how we can position ourselves in the Asian market. I think a foray into Asia is very much possible for us over the course of the next 12 years. We are watching the development of new aircraft very closely," he says.

"Air Vanuatu is looking at the A330neo, the A321LR and we're watching the Boeing products. We're quite intrigued by the NMA [Boeing's New Midsize Airplane]."

He thinks he may still be around when and if Air Vanuatu embarks on another expansion drive. Nice, who was appointed CEO only in June 2018, says it has been a good ride so far and he feels at home in very remote and isolated Vanuatu.

"It's been fun, very interesting," he exclaims. "Vanuatu is a great country and we have a great team. Yes, I think I'm going to stick around for a while."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Airfinance Journal Awards shortlists

AIRFINANCE JOURNAL AWARDS2018

More than 320 submissions were received for the *Airfinance Journal* Awards 2018, covering more than 128 unique deals. The shortlists include deals of the year, team awards and individual categories.

Airfinance Journal has again revamped its global awards judging and categories to ensure our winners are the most deserving in the sector.

Unlike other awards, which rely exclusively on their hosts' views, *Airfinance Journal* works with the collective voice of the global industry. This year we have expanded our international judging panel to include nine senior aviation finance executives from the airline, finance, legal and manufacturing sectors. The combined knowledge and experience of our expert judging panel provides the *Airfinance Journal* Awards adjudication process with an added layer of independence that is not found at our competitors' awards.

The shortlists for these prestigious awards, which will take place at the Metropolitan Club in New York on 2 May, has been compiled after a rigorous judging process.

There are 31 categories considered in this year's *Airfinance Journal* awards.

Asia-Pacific Deal of the Year
- Project Melville-Macquarie AirFinance $4bn unsecured revolver and term loan
- Qantas Airways A$450m loan notes
- Minsheng Financial Leasing $143m PDP financing for eight 737 Max 8s

Europe Deal of the Year
- British Airways $609m EETC and Jolco for 11 aircraft
- Nordic Aviation Capital $227m Jolco financing for 12 E190s
- Turkish Airlines Italian tax lease with AFIC financing for two aircraft

Latin America Deal of the Year
- Avianca UKEF-guaranteed Jolco financing for one 787 aircraft
- Azul $313m secondary equity offering on behalf of Hainan Airlines Holding
- Latam $302m term loan for 32 aircraft

Middle East & Africa Deal of the Year
- Novus Cedar Aviation fund for four aircraft
- Ethiopian Airlines $670m AFIC-supported financing for five 737 passenger aircraft and three 777F cargo aircraft
- Kestrel 2018-1 $379m ABS for 18 aircraft

North America Africa Deal of the Year
- GECAS STARR 2018-1 $687m 24-aircraft ABS
- Air Lease Corporation TBOLT II $450m ABS for 18 aircraft
- Zephyrus Aviation Partners ZCAP 2018-1 $336.6m 21-aircraft ABS

Bank Loan Deal of the Year
- Perilune Aviation $119m two-aircraft purchase and lease novation
- Project Melville-Macquarie AirFinance $4bn unsecured revolver and term loan
- Limited recourse secured financing of four 777-300ERs on lease to BA for Novus Aviation Capital

Export Credit Deal of the Year
- Aeromar ECA-guaranteed loans for six ATR72 and two ATR42 aircraft
- Avianca 787 UKEF-guaranteed Jolco
- Emirates $600m two-A380 ECA guarantee

Islamic Deal of the Year
- DAE $800m revolving credit facility
- Etihad Airways senior loan and mezzanine Murabaha for one 787-10
- Novus Aviation Capital Islamic financing for four 777-300ERs

Tax Lease Deal of the Year
- Virgin Australia $120m Jolco for six 737-800s
- Royal Air Maroc $148.6m AFIC French lease for one 787 and one 737 Max 8
- Vietjet Air Jolco for five A321s

Operating Lease Deal of the Year
- AirBaltic $72.4m sale and leasebacks for two A220-300s
- Spicejet/ICBC $60m PDP financing commercial loan and sale and leaseback for four 737-800s
- EasyJet sale and leasebacks for 10 A319s

Structured Lease Deal of the Year
- Smartwings Euro equivalent of $140m AFIC-supported financing for three 737 Max 8s
- Norwegian Air Shuttle $90m ANPI structure for two 737 Max 8s
- Investec $96m aviation fund for one A330

Engine Deal of the Year
- Willis Lease Finance Corp WEST IV $373.4m ABS for 55 engines

Used Aircraft Deal of the Year
- Air Canada sale and leasebacks for 25 E190s
- Virgin Australia $120m Jolco for six 737-800s
- VX Cargo 2018-1 35-aircraft $189m ABS

Equity Deal of the Year
- Azul $313m secondary equity offering on behalf of Hainan Airlines Holding
- Altavair KKR joint venture
- ORIX Aviation $2.2bn acquisition of 30% stake in Avolon

M&A Deal of the Year
- Goshawk-Sky Leasing acquisition and $900m unsecured financing
- Carlyle Aviation Partners acquisition of Apollo Aviation Group
- ORIX Aviation $2.2bn acquisition of 30% stake in Avolon

Restructuring Deal of the Year
- Air Berlin six-aircraft insolvency and restructuring
- AirAsia Group 45-aircraft Labuan restructurings
- Bocomm Leasing $200m French tax lease for seven aircraft

Lessor Unsecured Bond Deal of the Year
- Avation $300m senior notes
- Avolon $1bn senior notes
- BOC Aviation $350m floating rate notes

Airline Unsecured Bond Deal of the Year
- Korean Air $300m unsecured notes
- Cargojet C$75m unsecured notes
- Delta Air Lines $1.6bn three-, five- and 10-year unsecured notes

ABS Deal of the Year
- GECAS STARR 2018-1 $687m 24-aircraft
- Air Lease Corporation TBOLT II $450m for 18 aircraft
- Zephyrus Aviation Partners ZCAP 2018-1 $336.6m 21-aircraft

Overall Capital Markets Deal of the Year
- Air Lease Corporation TBOLT II $450m ABS for 18 aircraft
- BOC Aviation $350m unsecured bond
- British Airways $609m EETC and Jolco for 11 aircraft

Innovative Deal of the Year
- Spirit Airlines $160m PDP financing for 43 A320neo aircraft
- China Aircraft Global $1.15bn joint venture 18-aircraft portfolio financing
- United-Avianca $673m transaction

Overall Deal of the Year
- ORIX Aviation $2.2bn acquisition of 30% stake in Avolon
- FLY Leasing/Incline 84-aircraft portfolio acquisition
- Air Lease Corporation TBOLT II $450m ABS for 18 aircraft

Editor's Deal of the Year
Presented by the *Airfinance Journal* editorial team

TEAM SHORTLISTS

Aviation Finance House of the Year
- BNP Paribas
- Citi
- Crédit Agricole-CIB

Lessor of the Year
- Avolon
- CALC
- Novus Aviation Capital

Airline Treasury Team of the Year
- AirAsia
- American Airlines
- Turkish Airlines

Lessor Treasury Team of the Year
- Avolon
- BOC Aviation
- DAE

INDIVIDUAL AWARD WINNERS

Aviation Finance Person of the Year
To be announced at the event

News Event of the Year
To be announced at the event

Lifetime Achievement Award
To be announced at the event

Airline of the Year
To be announced at the event

Arm your leasing platform with enterprise architecture

Driven by growth ambitions and facing the accelerating pace of market consolidation, lessors with well-implemented enterprise architectures benefit from both cost- and differentiation-based competitive advantages over their rivals.

Yearly surveys routinely indicate a need for enterprise architecture (EA). Chief information officers across all industries, including aviation finance, often list implementing or improving an EA initiative as a top priority.

"The good news is that every lessor already has an enterprise architecture. When it comes to evaluating its effectiveness and economics, the key question is: 'Do we have the right one?'," asks John McCartney, Zeevo Group principal.

"The need for EA is rooted in two of its main objectives: (1) aligning the business and its operations with information technology (IT); and (2) bridging the gap between the company's current state and its desired future state, especially when in a rapid growth mode," he adds.

In its simplest sense, an aircraft lessor's EA is a collection of tools it uses to manage the storage and flow of the platform's fleet and financial data. Often, one of those key tools is Microsoft Excel.

"We constantly see poorly implemented EA frameworks among lessors, which rely heavily upon the use of unfit tools that render their systems random, ad hoc, and inefficient. These characteristics are ill-suited to a capital-intensive, competitive and constantly changing global industry like aircraft leasing," notes McCartney.

Lessors with well-executed EA frameworks benefit from both cost- and differentiation-based competitive advantages over their rivals, as their frameworks are nimble enough to adapt effectively to the increasing demands of their growth and withstand the impending effects of market consolidation they may face. Well-integrated, coherent and often proactively designed EA frameworks mean the difference between an aircraft leasing platform's survival or going to the wall.

Competitive advantage rooted in effective EA

Today, aircraft leasing is a highly competitive industry, which has seen an unprecedented number of new entrants over the past decade. Sector consolidation is also continuing apace, with recent landmark acquisitions such as AWAS by DAE, Avolon by Bohai and ILFC by AerCap, to name just a few.

In a capital-intensive industry, there are a number of ways potentially to create a competitive advantage. Optimising working capital, creating a low-cost position by taking advantage of geographic variances, strategic merger and acquisitions, and maximising returns around services offerings are some of the ways that have been identified. Being able to measure and improve the returns around these activities requires the collection, transmission and storage of the data associated with relevant metrics.

Each firm has an easy path to follow as far as satisfying its IT requirements. IT can quickly and easily solve the problems of a low-volume, high-value transaction industry with off-the-shelf tools – often with consumer-based products – and the most basic of system security protocols.

For the initial period of growth, tracking assets is easy, and a low number of staff is required to run the firm. A skeleton IT staff may be sufficient to keep the laptops patched and manage the increasing collection of mobile devices and local office WiFi challenges. The balance of the firm's staff profile and operational tasks are tilted strongly towards market analysis and deal-making value activities. Little, if any, thought is usually assigned to the impending informational challenges of successful growth.

However, as a leasing platform accelerates the pace of its expansion, the significant information demands from investors, the need to support the commercial team and the increasing fiduciary responsibilities will eventually necessitate the lessor to establish new formal procedures.

The service demands of clients also become increasingly multigeographical, placing language, time-zone and travel demands on key staff. When travelling, the need for information to be available remotely and instantly to close deals becomes exposed. Setting up regional offices solves some of those problems but creates others. Related information may now be split across multiple jurisdictions, in various currencies, and tailored to different local regulatory requirements. Global financial management reporting and treasury function demands also increase. As an enterprise grows, it acquires numerous pieces of software to manage today's problems quickly and effectively.

To illustrate, one of the critical value activities of every aircraft lessor is fleet management.

"In our experience, once the lessor's fleet size hits around 70 to 100 aircraft, an unplanned enterprise architecture begins to break down," says McCartney. "At this growth limit, manual procedures in information tracking, operations, billing and other processes begin to introduce and accumulate potentially significant errors and omissions."

Different individuals may have managed the details associated with maintenance events, reserves transactions, return conditions and important lease provisions in poorly controlled spreadsheets and documents, and this makes it difficult for the teams properly to value and package the assets. More time is spent finding the correct version of the information – often stuck in someone's mailbox or on a local laptop.

> *"In our experience, once the lessor's fleet size hits around 70 to 100 aircraft, an unplanned enterprise architecture begins to break down."*
>
> **John McCartney**, principal, Zeevo Group

Forecasting efforts are a real struggle because the right feed of data needed for the sophisticated algorithms to show their power is not available. Data starts to age, CRMs become cluttered with old leads and return-on-investment calculations on campaigns become slow and painful to do because the CRM is not integrated with the financial software. In short, all the operational efficiencies in your poorly implemented enterprise architecture are exposed.

"Ultimately, deals can be lost, and tremendous amounts of energy are consumed trying to sort out internal issues rather than creating or exercising your competitive advantages in the market," says McCartney.

Key organisational components EA supports

As noted at the beginning of this article, every lessor already has an enterprise architecture. Managing stock of assets and the sales and marketing endeavours are likely to be two of the most important value creators. Ensuring an effective transfer of information between these value activities is one of the key objectives of enterprise architecture.

However, being able to secure and funnel all the relevant data quickly and accurately to the various decision-makers of an organisation is not a trivial task; scenario planning is only as good as the data plugged into it, and it will be difficult to leverage information as a competitive advantage if employees cannot access it.

Lessors may even be underequipped to deal with any active or passive cyber-security threat that is targeting their firm and their data. Compliance issues, eg, GDPR and email list management, can consume large amounts of internal resources trying to funnel the right data at the right time.

From an enterprise architecture perspective, there are a number of organisational components within a firm that must be supported:

1. The *business* architecture (what the firm does);
2. The *data* domain (the data managed by the firm);
3. The *applications* domain (the software used);
4. The *infrastructure* (the networks, and physical devices used);
5. The *security* of the firm's enterprise architecture; and
6. The *compliance* requirements of the firm (eg, GDPR).

Each of these domains overlaps, and the challenge of enterprise architecture (or specifically an enterprise architect) is to:

- create descriptions of today's enterprise architecture and tomorrow's future version, which must be aligned to the firm's strategic goals;
- quantify the gap between the two states;
- plan a migration from today to tomorrow; and
- govern the implementation of the transition.

How to create valuable enterprise architecture

Even if the C-suite has not thought much about it until now, it is not too late to start designing an enterprise architecture that promotes business growth rather than continuing to tolerate one that is likely already getting in a lessor's way. Making the decision to take enterprise architecture seriously is one thing. Implementing a decision is quite another.

As with so many of today's complex problems, working with the right people is a fundamental success factor in solving technology challenges successfully. Given the typical staff balance in leasing companies, it is unlikely that an existing IT team would have the required knowledge to carry out the duties of an enterprise architect. Equally, enterprise architects are typically responsible for the design of a solution and not for the actual implementation (not unlike traditional architects who pass requirements to contractors and builders to build their designs).

Consequently, enterprise architects can be difficult people to recruit and retain over the required timescale.

It would seem to make sense instead to partner with an external adviser that knows the industry well and has the necessary skills to architect and implement the changes a lessor requires to create a competitive advantage with the information and market positioning. At the very least, a lessor needs to be sure that the firm is operating as efficiently as competitors. Benchmarking the platform against industry-leading practices provides just the right amount of visibility to make an informed decision about where the C-suite should go with their enterprise architecture – and the business.

Current and future trends

Of course, no conversation about IT is complete without mentioning IT change. The rate of technology advancement over the past two decades has been staggering, and many firms have failed to recognise the required shift from physical processing capability to information processing capability.

There are four specific trends that are gaining quite a lot of attention. Buzzwords such as Big Data, Blockchain, Artificial Intelligence (AI) and The Internet of Things (IoT) are a few that have made some of the biggest waves in recent years. As with all revolutionary technologies, it is impossible to say exactly how and when any sort of true competitive advantage can be created through their implementation:

- *Big Data* (or even just good business intelligence) can revolutionise a lessor's understanding of fleet economics;
- *Blockchain* could speed up sales by creating greater trust in maintenance records that are independently and instantly verifiable as true, complete and correct;
- *IOT* could create entirely new ways of tracking engine or fuselage wear and tear – helping to optimise maintenance schedules and even pre-empting technical failures that occur outside the manufacturer's expected tolerances; and
- *Artificial Intelligence* could find ways to optimise a lessor by being able to provide multilingual, instantaneous translations of texts and phone calls 24/7 to your entire global client base; perhaps an AI presence on every asset you own could help to ensure that aircraft are being managed properly between maintenance checks or even in-flight.

An enterprise architecture is not a silver-bullet defence against these coming revolutions, in which every lessor, one way or another, is likely already investing. McCartney says that at a minimum, "having a fit-for-purpose enterprise architecture should at least position your platform to be able to react when something material hits the technology stack in aircraft leasing. If you can't even conduct a reliable scenario modelling exercise without effort – you're almost certain to be left behind when your rivals turn on their new afterburners; perhaps too far behind to even catch up when you finally get your own firm upgraded".

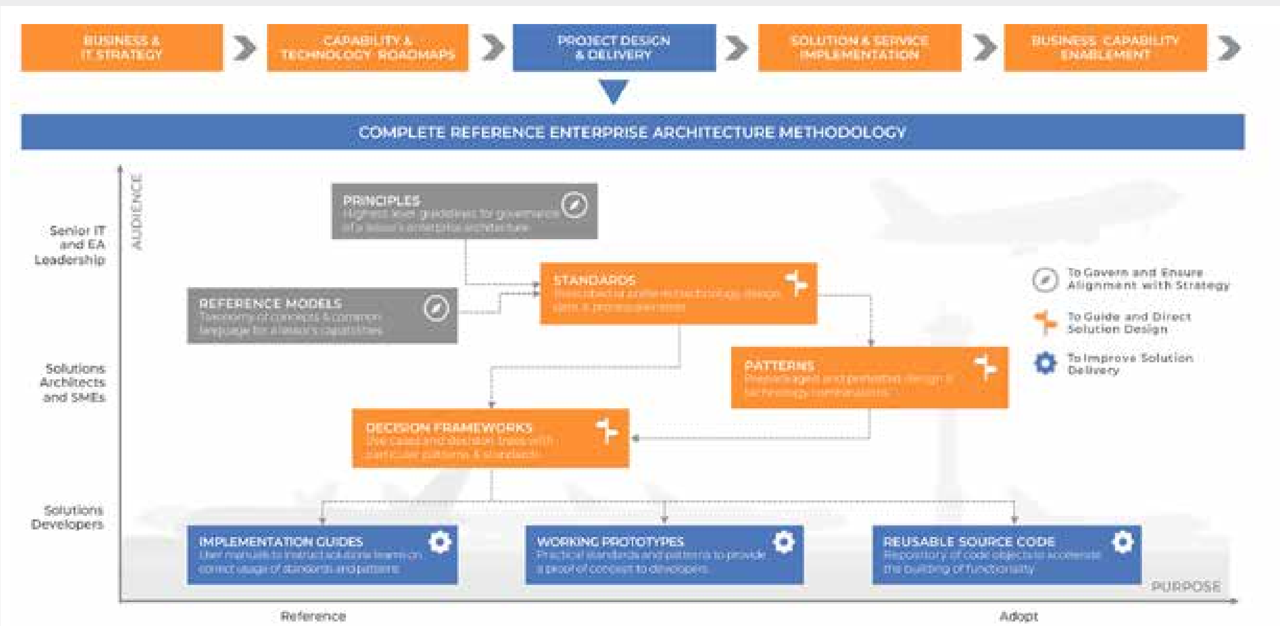
So what is next?

As your leasing platform grows, it will develop an enterprise architecture – often in an unstructured and ad-hoc manner. Taking the time to design an effective EA framework can help to eliminate operational bottlenecks and pave the way to creating cost- or differentiation-based competitive advantages.

While you may not have the skills and expertise in-house to create and maintain an effective enterprise architecture, partnering with a knowledgeable expert, such as Zeevo Group, can equip your platform with the required know-how.

The Zeevo Group team has developed a complete reference enterprise architecture methodology tailored to the needs of aircraft lessors, based on best practices and extensive experience in assisting solutions delivery teams with making effective design and technology choices.

Complete reference enterprise architecture methodology



Source: Zeevo Group

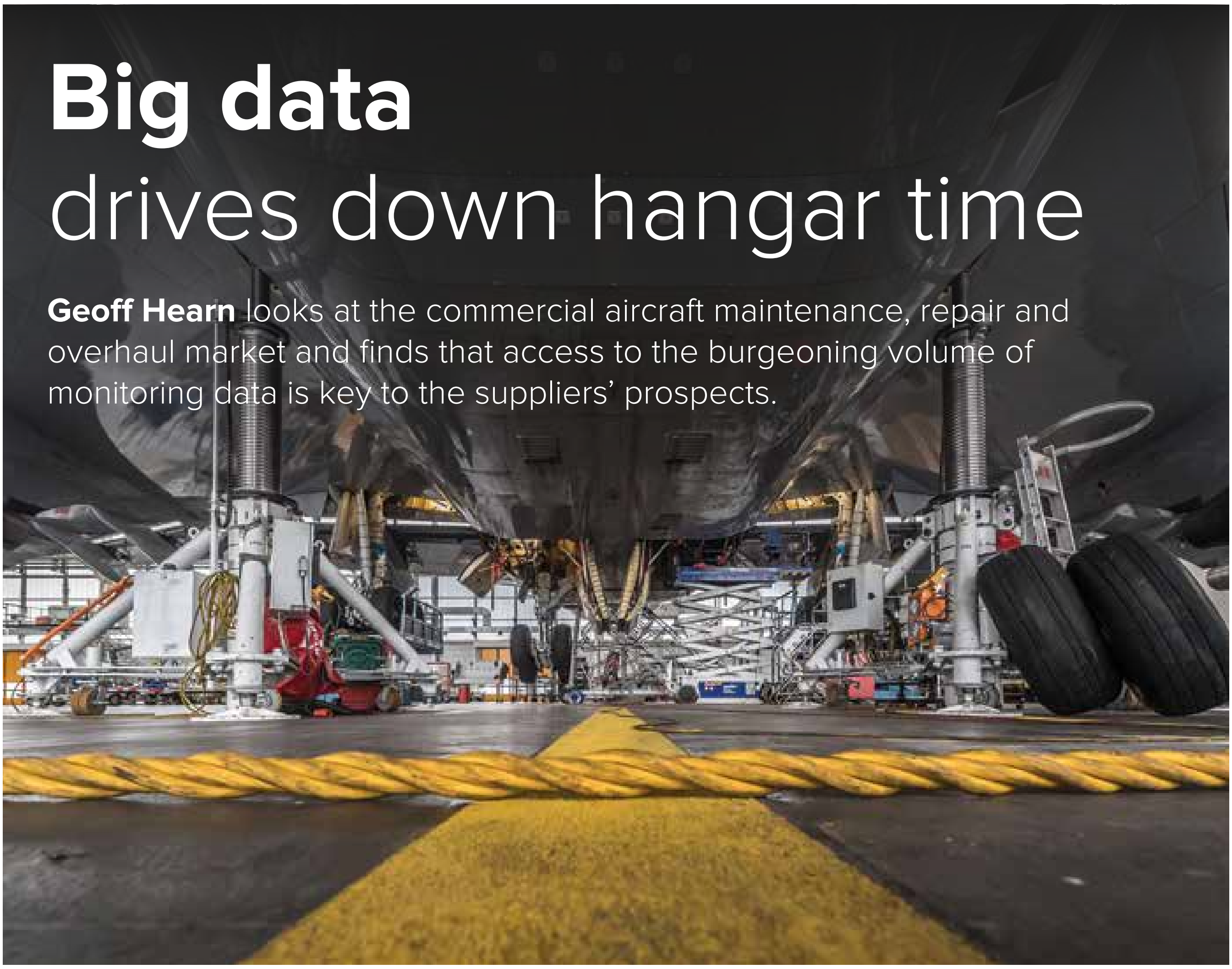
The Zeevo Group team has developed a complete reference enterprise architecture methodology tailored to the needs of aircraft lessors, based on best practices and extensive experience in assisting solutions delivery teams with making effective design and technology choices.

"Zeevo Group knows the ins and outs of aligning technology initiatives with corporate strategy and business objectives. Our clients realise significant gains in productivity and operational efficiency through assessing opportunities, auditing capabilities, evaluating alternatives and defining requirements that guide design, implementation and management of sustainable IT solutions and enterprise architecture frameworks," concludes John McCartney, Zeevo Group principal.

The Zeevo Group team will avail your business. Learn more about Zeevo Group's EA services at **zeevogroup.com**.

Big data drives down hangar time

Geoff Hearn looks at the commercial aircraft maintenance, repair and overhaul market and finds that access to the burgeoning volume of monitoring data is key to the suppliers' prospects.



On the surface, the maintenance, repair and overhaul (MRO) of commercial aircraft appears not to have changed much in recent years. Walking around a typical hangar the casual observer will still see aircraft parked in various states of disassembly and large numbers of people are likely to be working on an array of tasks. But, in fact, much is different, not least the decreased frequency that aircraft visit a hangar and the shorter time they stay there.

The reduction in these key parameters is in part made possible by the monitoring data that modern aircraft provide to operators and manufacturers.

Healthy background drives up spending

The good news for suppliers is that on the back of a profitable airline industry, demand for MRO services is increasing.

The international aviation consultancy ICF predicts that the MRO market will grow by 4.6% a year and is likely to be worth about $118 billion by 2027. The consultancy points to good airline profitability and positive traffic growth as factors behind the increase in the worldwide commercial aircraft fleet of about 3.5% a year. This has a knock-on effect on growth in the MRO market, although the relationship is not straightforward because the replacement of ageing aircraft by newer models tends to reduce the maintenance requirement, at least in the short term.

As in so many areas of commercial aviation, Asia is playing an increasing role. The region accounts for about 30% of total spend – making it a larger market than both the USA (27%) and Europe (26%). ICF predicts that Asia's share will increase to 38% by 2027.

Less time in the hangar

Manufacturers have long been claiming that maintenance costs of new aircraft have been decreasing. There has been a view in some quarters that this reduction was theoretical and that in the real world costs continued to increase. However, there is mounting evidence to back up the manufacturers' claims that reductions in scheduled tasks and longer intervals between major checks are translating into genuine cost savings for operators – at least in the case of airframes.

ICF draws a comparison between the C-check requirements for a Boeing 767 and the equivalent requirement for a 787. The ICF analysis indicates that over a 12-year maintenance cycle, a 767 would undergo eight C-checks compared with four required by a 787. According to the consultancy, this would translate into a saving of 62,000 workhours.

Joost Groenenboom, principal, ICF, points out that not only are there fewer checks for the 787, but individual checks consume fewer workhours than in the case of the 767.

In addition to obvious cost savings, the 787 is likely to spend about 90 fewer days in the hangar. The increased productivity aspect of reduced maintenance requirements is a key part of the manufacturers' sales pitches for new-generation aircraft. Although this trend is clearly a good one for operators, it undoubtedly poses challenges for MRO suppliers.

New-technology models taking over

The lower maintenance requirements will have an increasing impact on the demand for MRO services as new-technology aircraft roll out and make up an increasingly large proportion of the worldwide fleet. ICF estimates that this trend will see new-technology aircraft (models certificated since 2010) accounting for about 54% of worldwide spend on heavy maintenance by 2028.

Engines

The advantages of the latest technology engines are centred on fuel savings. The manufacturers claim a modest improvement in maintenance costs over the engines they supersede. However, some industry observers suggest that the increased complexity of the new engines makes maintenance savings difficult to obtain and, at least initially, is likely to make the latest technology engines more expensive in this regard. In any case, at the current relatively low fuel prices, the balance between fuel and maintenance cost is a delicate one.

The initial entry-into-service troubles of the CFM Leap and Pratt & Whitney GTF engines have not helped in making the case that they will be cheaper to maintain. However, most observers believe the difficulties will be overcome as the engines mature.

Although entry-into-service problems have been disruptive, the direct cost to operators and owners is mitigated by guarantees, and, in any case, the majority of new-technology engines are covered by manufacturer schemes, which largely insulate operators from the cost of defects – but not from the disruption they cause.

Groenenboom suggests that the new-technology engines have a tough act to follow in terms of improving on maintenance costs and reliability. “The current generation of engines are very mature and on-wing times in particular have reached unprecedented levels,” he says.

Components

The landscape of suppliers of rotable components and systems has changed dramatically. There were close to 30 suppliers for the 777 when it first entered service, but in the case of the 787, more than 80% of components are provided by four or five suppliers. These large suppliers are in a position to exert greater influence on the aftermarket and to capture a larger share of the revenues it generates. This provides integrators, independent and airline MROs with challenges, although there are also opportunities.

Groenenboom says one area that is attracting a lot of attention is the part-out business, but he cautions that there are challenges in the field, not least from the increasing number of competitors in the market.

Maintenance requirements over 12-year cycle

	C-checks	Workhours	Days in hangar
767	8	95,000	136
787	4	33,000	47

Source: ICF

Controlling and managing data is key

The increasing adoption of manufacturer schemes is a long-standing trend for engines and one that has become increasingly prevalent in high-value rotable (repairable) components. The trend has been much less pronounced in the airframe maintenance market, despite efforts by the original equipment manufacturers (OEMs). Historically, the airframe manufacturers’ income from aftersale services has been limited to about 10% of their total revenue, which is a significantly lower proportion than for OEMs in other sectors. Although the airframe manufacturers have extensive services to support their own fleets, most activities are performed by suppliers and specialised MROs.

However, the increasing importance of leveraging the huge quantities of data generated by the latest technology aircraft may be strengthening the OEMs’ hands in their attempt to gain a larger share of the lucrative aftersales market.

The scale of data generated by modern aircraft equipped with aircraft health monitoring (AHM) is remarkable. On an individual model basis, the increase in data is already huge. A 777 generates less than a megabyte of data per flight, whereas a 787 model generates about 28 megabytes. However, it is the fleet-wide impact that really catches the eye. In 2012, ICF estimated about 11 terabytes were generated by the worldwide fleet, but this figure is set to rise more than tenfold to about 137 terabytes by 2022 and to continue rising thereafter.

The increase is explained by the expectation that about 23,500 aircraft will be equipped with AHM by 2027. This increased digital capability will facilitate high growth in e-enabled services leading to further advances in health management, protective maintenance and inventory optimisation.

This leads to the question as to who will benefit. Operators, lessors, OEMs and MRO suppliers all have a stake in trying to control, analyse and leverage the data. Big data analytics is a key enabler, but one which requires significant investments that may be beyond the means of many stakeholders.

The importance of the issue to independent suppliers was borne out by the emphasis placed on the development of digital products by Lufthansa Technik (LHT), at its annual press conference (*see page 38*).

OEMs and MROs, including Airbus, Air France/KLM, AAR, Boeing and LHT, are pursuing partnerships to cover the various aspects of data handling and processing. Many of the partners are from outside the commercial aviation world and include household names such as Microsoft and Oracle.

Leased aircraft increasingly important

The increasing importance of aircraft leasing in the commercial airline business poses some difficulties for MRO suppliers. In particular, satisfying the needs of aircraft lessors and owners can be challenging because it is normally the lessee/operator which is the MRO organisation’s customer. Nonetheless, lessors and financiers clearly have an interest in how their asset is being maintained and they are increasingly important stakeholders.

Patrick Metz, senior sales executive, lessors and banks, Lufthansa Technik, says that the split between leased and operator-owned narrowbody aircraft is about 50/50 and that leased aircraft account for about 35% of all the aircraft. However, direct revenues from lessors are a small part of the turnover of MRO organisations.

The problem for MRO organisations is that the requirements of lessor’s often differ from those of airlines that are the core of their businesses. For example, bridging checks, where an aircraft is aligned to the maintenance programme of a new lessee, can prove problematic for MROs, particularly if they have not previously been responsible for maintaining the aircraft.

Modern aircraft typically change operator four times in the course of their lives. It is rare for a change in operator not to present some maintenance-related issues, particularly if a change of regulatory jurisdiction is involved. Even if a lease termination is anticipated (and often they are not), lessors and lessees can be surprised by unforeseen maintenance issues, which often necessitate support from an MRO organisation.

For the lessor, the problem is often the necessity to find MRO capacity at short notice. Such capacity is often in short supply and any availability is highly seasonal.

Metz points to the spate of bankruptcies, including Air Berlin and Monarch Airlines, that occurred at the beginning of the 2017/18 European winter as an example of the difficulties that can arise with unplanned lease terminations. MRO facilities were just entering their busiest period as the lessor requirement for capacity spiked. MROs have more flexibility in the summer, but the lessors are rarely able to choose when to repossess aircraft.

LHT suggests there are six key areas where financiers (particularly operating lessors) may need support from an MRO organisation: aircraft assessment, aircraft acquisition, aircraft transition, technical and operational support, interim support (during remarketing) and, eventually, aircraft part-out. Many operating lessors have some or all of these capabilities in-house, but economies of scale often preclude covering the complete spectrum.

Metz says the emergence of lots of smaller lessors, particularly in China, provides opportunities for MRO suppliers to offer services and build-up relationships with organisations which do not have the economies of scale that enable them to support their own large technical departments.

Long-term relationships between operators and maintenance organisations are likely to provide the best results for both parties. The same logic applies to the relationship between the MRO provider and lessor, but because the MRO-related requirements from lessors are generally less predictable, such relationships are more complex to develop and Metz says that LHT is using individual test cases to work out the best way of meeting the challenges.

The increasing role of leased aircraft can also impact the MRO requirements of operators. Although airlines are generally well set up to manage the engineering and maintenance requirements for their operations, they often underestimate how onerous meeting return conditions can be and this can prove costly. Lease contracts often stipulate that any lease return deferral will be charged to the lessee at a penalty that typically doubles the lease rental cost. So, for example, for an Airbus A320 with a monthly lease rate of $300,000, a lessee can be exposed to a delay cost of $20,000 a day.

Lufthansa Technik shows challenges facing independent MROs

Lufthansa Technik (LHT) recorded another year of growth in 2018 despite pressure on pricing and the need to invest heavily in new data products, which are increasingly important to surviving let alone prospering in the maintenance, repair and overhaul market (MRO).

At a press conference to announce LHT's results, Johannes Bussmann, chairman and chief executive officer, reported the company had increased sales revenue by 9.5% to €5.92 billion ($6.65 billion).

There are, however, threats to the independent MRO services supplier. A major concern is the emerging importance of controlling and processing the huge amounts of maintenance data that modern aircraft generate, which potentially allows manufacturers to gain control of the data from operators and develop a stranglehold on providing maintenance services.

To counter the threat, LHT is investing heavily in digitalisation and is bringing other interested parties on board to offer an independent platform for aircraft operators.

The company has set up a platform under the name Aviation Datahub, which is run as an independent company with a view to attracting other stakeholders. The motivation behind this move, although not overtly stated by LHT, is clearly to counter the influence of manufacturers.

The company says: "Airlines in particular will now be able to decide whether and with whom they want to share their data regarding the technical support of aircraft of the improvement of ground-handling and flight operations."

The company's annual report is, however, more explicit in identifying the threat from airframe manufacturers. It states: "The high development costs and a low revenue share from aircraft sales mean that [airframe] OEMs in particular are interested in expanding their share of the maintenance business."

The report adds: "In the field of digitisation too, increased interest in the MRO market can be seen on the part of aircraft manufacturers, who are using digital platforms in an attempt to force their way into the space between airlines and MRO service providers."

Despite the increasing interest of airframe manufacturers in the MRO market, Bussmann told *Airfinance Journal* that he did not see any likelihood in the near future of joint ventures with airframe manufacturers along the lines of those that the company has entered into with engine manufacturers.

CRJ900 – new markets anticipated

The CRJ900 is viewed as a North American aircraft, but new markets are required and Bombardier sees plenty of potential.

The Bombardier CRJ900 is a stretched version of the CRJ700 regional jet, which is itself a stretch from the successful CRJ200. The CRJ200 was, in turn, a development from Bombardier's Challenger business jet. Compared with the CRJ700, the CRJ900 has more powerful General Electric CF34-8C5B1 engines, strengthened wing and main landing gear, increased baggage volume and two additional overwing emergency exits.

Bombardier quotes the CRJ900's capacity as 88 seats in a single-class configuration. The manufacturer also offers a high-density layout that can accommodate 90 passengers.

Developments

The most recent major developments have focused on the CRJ's interior. Bombardier says the latest version of the regional jet's cabin, which it calls "Atmosphere", offers a greater sense of spaciousness, while providing overhead bins that accommodate more carry-on baggage. The new interior also incorporates enhanced lighting and a new window design.

Market forecast

Bombardier believes the market for 60- to 100-seat aircraft over the next 20 years will be about 5,750 aircraft, which it says represent about $240 billion.

This growth is partly driven by a replacement demand because of aircraft retirements. Bombardier forecasts 2,100 aircraft, more than 60% of the current fleet, will be retired over the next 20 years. The company adds: "An up-gauging effect will occur such that smaller 20- to 60-seat aircraft will be phased out of service and gradually replaced by 60- to 100-seat aircraft."

The Canadian manufacturer says regional jet demand will continue to be concentrated in North America and Europe because of the existing large installed base. However, newer markets will account for more than half of the predicted deliveries overall. Bombardier estimates that 2,400 of the 20-year total will be accounted for by Europe and North America, with the remaining aircraft deliveries going to newer markets.

Bombardier CRJ900

What percentage of this market will be captured by the CRJ900 is a matter of debate. In North America, the outcome will be heavily influenced by the US pilot scope clauses that limit the size/takeoff weight of aircraft that can be used by regional feeder carriers. At present, these exclude the next-generation competitors to the CRJ900 model.

In other markets, the Bombardier aircraft may face competition from new entrants such as the Mitsubishi Regional Jet (MRJ) and the next generation of Embraer jets; the E175-E2. However, these aircraft have some way to go before they are in-service.

New markets

Bombardier believes that new markets will develop in Asia, where airlines have tended to focus on larger cities, which had the necessary airport structures in place. But these airports are starting to experience capacity limitations and governments are investing in airports and infrastructure in smaller population centres. The new routes that are built up as a result are likely to be well suited in terms of traffic levels to smaller aircraft such as the CRJ models. According to the manufacturer, these regional markets are growing faster than the main trunk routes.

Forecast distribution of 60- to 100-seat aircraft deliveries

Region	20-year deliveries
North America	1,400
Europe	1,000
Greater China	900
East Asia and Oceania	900
Latin America	500
Russia and CIS	400
Africa	300
Middle East	200
South Asia	150

Source: Bombardier

AIRCRAFT CHARACTERISTICS

Seating/range

Dual class	81 passengers
Single class	88 passengers
Maximum seating	90 passengers
Maximum range	1,550nm (2,871km)

Technical characteristics

MTOW	38.3 tonnes
MLW	34.1 tonnes
MZFW	31.8 tonnes
OWE	21.8 tonnes
Fuel capacity	10,990 litres
Engines	Two General Electric CF34-8C5
Thrust	13,360lbf (59.4 kN)

Fuels and times

Block fuel 200nm	1,200kg
Block fuel 500nm	2,200kg
Bock time 200nm	53 minutes
Block time 500nm	94 minutes

The figures shown for fuels and times are based on a single-class seating at 100% load factor; typical airline assumptions and reserves.

Fleet data (all variants)

Entry into service	2003
In service	438
Operators	27
In storage	9
On order	69
Average age	7.8 years

Source: *Airfinance Journal's Fleet Tracker and research*

Maintenance summary

A-check	800 hours
C-check	8,000 hours
Structure life	80,000 FC
Engine on-wing time	13,500 to 17,000 FC

Source: *Bombardier*

There is also potential growth in Africa. The company told *Airfinance Journal*: "With more and more travellers and investment heading into Africa, the airline industry will need to respond to growing demand. Above all, that means connecting the major hubs to the secondary cities. Regional aircraft are the tools to provide the backbone of a sustainable airline. To build something that will serve Africa in the long term, carriers will need to operate the right size of aircraft. Some of the more successful African carriers are already using regional aircraft in just such a manner."

Competition

Bombardier says the CRJ900 has up to 10% lower cash operating cost per seat than the competition. The actual figure is of course dependent on what seating capacities are assumed, and layouts vary from market to market. Although the CRJ900ER potentially faces challenges from new entrants, such as the MRJ, the main competition remains the E175.

Airfinance Journal's own analysis indicates that in terms of trip cost, the CRJ900 has an advantage of about 4% over the current-generation E175. However, sources say that the major US airlines typically credit the CRJ900 with a 5% cash operating cost advantage over the Embraer aircraft. How the CRJ900 will fare against the new generation of the E175 remains to be seen. The Brazilian manufacturer says the E175-E2 will deliver "double-digit percentage savings" over the first-generation aircraft. This figure, however, takes credit for an additional seat row that the latest-generation aircraft offers.

The four-abreast cabin configuration of the Embraer aircraft is generally perceived as superior to the CRJ's three-abreast layout, but this is mitigated by the superior seat-pitch that the CRJ900 can offer in a typical US configuration.

Market view

Gueric Dechavanne, vice-president, commercial aviation services, Collateral Verifications (CV), sees fuel price as a key factor in the prospects for CRJ900 values.

The current market demand for the Bombardier CRJ900 has remained stable with values and lease rates declining by only 5% or so in the past 12 months. Availability remains low, with only five aircraft listed as available for sale and/or lease. The secondary market for the type can be a concern to those trying to remarket aircraft, but CV feels this is a temporary phenomenon, which will improve as more second- and third-tier operators get created over the next few years. There is also some good potential for placing used aircraft as current operators of CRJ200s look to retire their ageing fleets and also grow or further develop their existing markets.

The introduction of newer more-efficient aircraft, such as the Embraer E2 family, the Mitsubishi MRJ, the Sukhoi SSJ and the Comac ARJ21, could also affect the CRJ900's future. However, the technical issues and lack of demand for some of these newer types suggest that they may not pose a significant challenge for the foreseeable future.

CV believes that the new entrants to the market would impact the CRJ900's residual values should they achieve any market penetration, but this is yet to occur. It is too early to tell exactly what the 75- to 90-seat market will require in the next few years. If the current low fuel-price environment continues, the CRJ900 would remain competitive, but if fuel prices rise, it could be perceived as outdated compared with its main rivals, such as the next-generation E175. On the other hand, if the US pilot scope clauses stay in place, demand for the CRJ900 might remain buoyant for some time.

CRJ900 values and lease rates (CV)

Build year	2012	2014	2016	2018
Current market value ($m)	16.48	18.51	20.62	22.05
Indicative lease rates ($000/month)	180	195	210	225

Widebody transition

The commercial aircraft widebody market is in a state of flux as new models are established and older ones come to the end of their production run. **Geoff Hearn** looks at how the various models are faring.

Developing successful widebodies has proved challenging for both Airbus and Boeing. Unlike in the narrowbody market, where failures have been rare, there is an array of widebody models that have failed or enjoyed little success. In some cases, such as the recent Airbus A380 announcement, there have been high-profile cancellations, but many programmes have simply ground to a halt, before being quietly dropped from the manufacturer's offering. The manufacturers tend stubbornly to maintain that models have a promising future even when the market appears to have rejected them.

Unlike the Boeing 747-400 programme, recent freighter versions have met with limited success in extending production runs. However, the freight version of the 747-8 appears to be the aircraft's only chance of remaining in production much beyond the recent 50-year anniversary of the original 747's entry into service.

The stubborness of the manufacturers results in a list of current competitors that is rather more crowded than might otherwise be the case.

Airbus A330-900

Boeing 787-10

Large models take their leave

However, the field is thinning out at the upper end of the size range, with the definitive announcement that the A380 programme will end in 2021, the passenger version of the 747-8 effectively out of production and the faltering 777-300ER due to be replaced. This looks like a significant opportunity for Boeing because the newly developed 777-9 will be the largest aircraft on the market and should offer seat-mile costs that are significantly lower than any of its Airbus rivals. The -9s orderbook already looks healthy, with close to 300 sales.

The situation for the 777-8 is less clear cut, with the A350-1000 appearing to be an effective competitor with a reasonably healthy backlog already established.

Sceptics might envisage the smallest of the new-generation 777s suffering a similar fate to the smaller A350 model, particularly given the two-year gap between the entry into service dates of the two Boeing models.

Mid-size models move centre stage

The demise of the A350-800 removed one of the smaller widebodies from the competition and the aircraft models that it would have rivalled appear to be increasingly marginalised as the market seems to have little appetite for direct replacements of aircraft of the 767's size. The A330-800 came back from the brink thanks to an order for eight aircraft from Kuwait Airways, and more recently Uganda Airlines for two units, but this looks insufficient for an aircraft that is scheduled to enter service in 2020.

The 787-8 has been a sales success, but its orderbook is diminishing relative to the 787-9, which forms part of the mid-sized group of aircraft that looks likely to generate the most competition between Boeing and Airbus. As well as the 787-9, the group includes the A330-900 and A350-900 as well as the larger 787 model, the -10.

Cost comparison

The manufacturers' claims for the cost advantage of their respective aircraft are at best opaque and frequently contradict their competitor's claims.

For example, Boeing says the 787-10 will deliver 25% better fuel per seat and emissions than the aircraft it will replace and a 10% improvement over the competition. The question is which competition and based on what assumptions?

Indicative relative direct cash operating costs for new widebody aircraft

	A330-300	A330-900	A350-900	787-9	787-10
Relative trip cost	Base	-8%	-2%	-7%	-6%
Relative seat cost	Base	-10%	-5%	-1%	-12%

Assumptions: figures are based on Airfinance Journal's interpretation of manufacturer claims and published data. For the purposes of this analysis, cash costs include fuel, navigation, landing, crew and maintenance

On the other hand, Airbus says as a result of the new engines and aerodynamic improvements, the A330neos deliver fuel savings of 14% per seat compared with in-production A330s. According to the manufacturer, the aircraft also offer increased range, additional payload capability and decreased maintenance costs.

These claims, particularly those for seat-mile costs, are difficult to verify because they rely heavily on seating capacity assumptions, which may be open to debate. In an attempt to bring more clarity to such comparisons, *Airfinance Journal* has analysed the relative operating costs of aircraft in this category.

Taking the A330-300 as the baseline for comparing direct cash operating costs shows that all of the new aircraft models offer significant cost savings over the current generation of aircraft. The A330-900 and the 787-10 show up in a particularly good light, offering double-digit saving in costs per seat. However, *Airfinance Journal*'s calculations indicate that none of the new models fully match the claims of the manufacturers. One reason for this is that *Airfinance Journal*'s assumptions are conservative in terms of the maintenance cost savings that the new generation of aircraft will provide. New technologies and designs undoubtedly allow manufacturers to reduce theoretical maintenance costs, but these can be offset by commercial realities.

Both the 787-10 and the A330-900 appear very competitive against their respective stablemates. *Airfinance Journal*'s analysis indicates that the gains in cash operating costs achieved by the new-generation aircraft are more than offset by their higher list prices. If more realistic pricing levels are used in the analysis, the new-generation models still only show very modest reductions in total operating costs. The analysis suggests that pricing premiums sought by the manufacturers for the latest models are too high in the current economic climate. However, the savings in operating costs would be higher should fuel prices start to rise again and this would justify higher capital costs associated with the new-generation aircraft pricing.

Time for replacement

Both Boeing and Airbus are managing the end of production of previously popular widebody models. *Airfinance Journal* asked Olga Razzhivina, senior Istat appraiser, Oriel, to review how the A330-300 and the 777-300ER are faring.

Airbus A330-300

The A330-300 total orderbook came very close to 800 units, with more than 700 aircraft remaining in service today. However, its backlog now stands at only 25 aircraft because it is being superseded by the A330-900, a new engine option (Neo) version powered by Rolls-Royce Trent 7000 engines.

The A330-300 has been trading and leasing in the secondary market for several years with some interesting dynamics. During the periods of peak demand in 2013-14, the A330-300 commanded a healthy premium over the smaller -200 model. However, the oversupply of twin-aisle capacity that followed has significantly lowered price and lease-rate expectations for both variants.

This abundance of supply, however, is a positive for the freighter-conversion programme as it overcomes the lack of feedstock and associated high pricing that had deterred freight integrators from making large-scale fleet decisions. The larger A330-300 is the preferred variant for the express package operators which focus on volume rather than weight.

The A330-300 is offered with three engine choices: the General Electric CF6-80E, the Pratt & Whitney PW4000 and the Rolls-Royce Trent 700. The Rolls-Royce option has nearly 65% of the total orders. Despite the smaller market shares for the CF6 and PW4000, the part-out market is more buoyant for these two models.

Rolls-Royce's power-by-the-hour engine maintenance scheme has been widely accepted by operators, but lessors and traders generally regard it as a factor limiting tradability. The manufacturer's recent efforts to open up the spare-part market are being closely watched by other stakeholders.

In today's benign fuel price environment, incumbent generation aircraft such as the A330-300 offer compelling economics because of their lower ownership cost. This can negatively impact the pricing and lease rates of the replacement new-generation aircraft. This is symptomatic of the oversupply of twin-aisle capacity, which is unlikely to dissipate as production rates for the new-generation replacements rise.

The freight-conversion programme is a positive and could help to absorb some of the excess capacity in the next few years and to introduce a floor to deteriorating values.

Boeing 777-300ER

The 777-300ER programme is one of Boeing's big success stories. The extended range (ER) version of the stretched 777-300 hit the sweet spot of an increasingly cost-conscious industry. The aircraft was eagerly ordered by mostly first-tier carriers which required transpacific range without the inherent cost disadvantage of four-engine aircraft. Since its entry into service in 2004, the 777-300ER has largely replaced the 747-400 on thinner routes, as well as complemented the A380 on the trunk city pairs.

Despite the 777-300ER's relatively young age, its successor – the 777X – was launched in November 2013 with two variants (the 777-8 and -9) offering higher capacity and 10% fuel burn savings. However, before the new version enters service in 2020, the current variant is to undergo continuous improvement offering a 2% fuel burn reduction and an improved cabin with 14 more seats.

Despite its huge popularity with the first-tier airlines and a single-source powerplant supplier, the secondary market for the 777-300ER is challenging. In the programme's early days, secondary lease rates were expected to be about 50% of the original rates, but much lower levels are being achieved for both lease extensions and new placements.

A freighter-conversion programme, although deemed too expensive for the smaller 777-200/-200ER, could be a solution for the larger -300ER. Its higher volume could complement the smaller 777-200LRF factory-built freighter.

Unless such a freighter-conversion programme is launched, the secondary market opportunities for the 777-300ER will remain limited. Some expiring leases will likely be extended, because the type is still very competitive in a low fuel-price environment. However, as airlines increasingly move to more capable smaller twin-aisles, 777-300ERs will exit first-tier fleets. These will face the increasing downward pressure on the values and lease rates.

Rating agency unsecured ratings

Airlines

	Fitch	Moody's	S&P
Aeroflot	BB-(stable)	-	-
Air Canada	BB-(stable)	Ba2(stable)	BB+(stable)
Air New Zealand	-	Baa2(stable)	-
Alaska Air Group	BBB-(stable)	-	BB+(stable)
Allegiant Travel Company	-	Ba3(stable)	BB-(stable)
American Airlines Group	BB-(stable)	Ba3(stable)	BB-(stable)
Avianca Holdings - IFRS	B(stable)	-	B(stable)
British Airways	BBB-(stable)	Baa3(stable)	BBB-(stable)
Delta Air Lines	BBB-(stable)	Baa3(stable)	BBB-(stable)
easyJet	-	Baa1(stable)	BBB+(stable)
Etihad Airways	A(stable)	-	-
GOL	B(stable)	B1(stable)	B-(stable)
Hawaiian Airlines	BB-(stable)	Ba3(stable)	BB-(stable)
jetBlue	BB(pos)	Ba1(stable)	BB(stable)
LATAM Airlines Group	B+(pos)	Ba3(stable)	BB-(stable)
Lufthansa Group	-	Baa3(stable)	BBB-(pos)
Qantas Airways	-	Baa2(stable)	-
Ryanair	BBB+(stable)	-	BBB+(stable)
SAS	-	B1(stable)	B+(stable)
Southwest Airlines	A-(stable)	A3(stable)	BBB+(stable)
Spirit Airlines	BB(neg)	-	BB-(stable)
Turkish Airlines	-	Ba3(neg)	B+(stable)
United Continental Holdings	BB(stable)	Ba2(stable)	BB(stable)
US Airways Group	-	-	-
Virgin Australia	-	B2(stable)	B+(stable)
WestJet	-	Ba1(stable)	BBB-(neg)
Wizz Air	BBB(stable)	Baa3(stable)	-

Source: Ratings Agencies - 12th April 2019

Lessors

	Fitch	Moody's	S&P	Kroll Bond Ratings
AerCap	BBB-(stable)	-	BBB-(stable)	-
Air Lease Corp	BBB(stable)	-	BBB(stable)	A-(stable)
Aircastle	BBB-(stable)	Baa3(stable)	BBB-(stable)	-
Avation PLC	BB-(stable)	-	B+(pos)	-
Aviation Capital Group	BBB+(pos)	-	A-(stable)	A(stable)
Avolon Holdings Limited	BB+(pos)	Baa3(stable)	BBB-(stable)	BBB+(stable)
AWAS Aviation Capital Limited	-	Ba2(stable)	BB+(stable)	-
BOC Aviation	A-(stable)	-	A-(stable)	-
Dubai Aerospace Enterprise	-	Ba1(stable)	BB+(stable)	-
Fly Leasing	-	Ba3(stable)	BB-(stable)	BBB(stable)
ILFC (Part of AerCap)	BBB-(stable)	Baa3(stable)	-	-
Park Aerospace Holdings	BB(pos)	Baa3(stable)	-	-
SMBC Aviation Capital	A-(stable)	-	A-(stable)	-

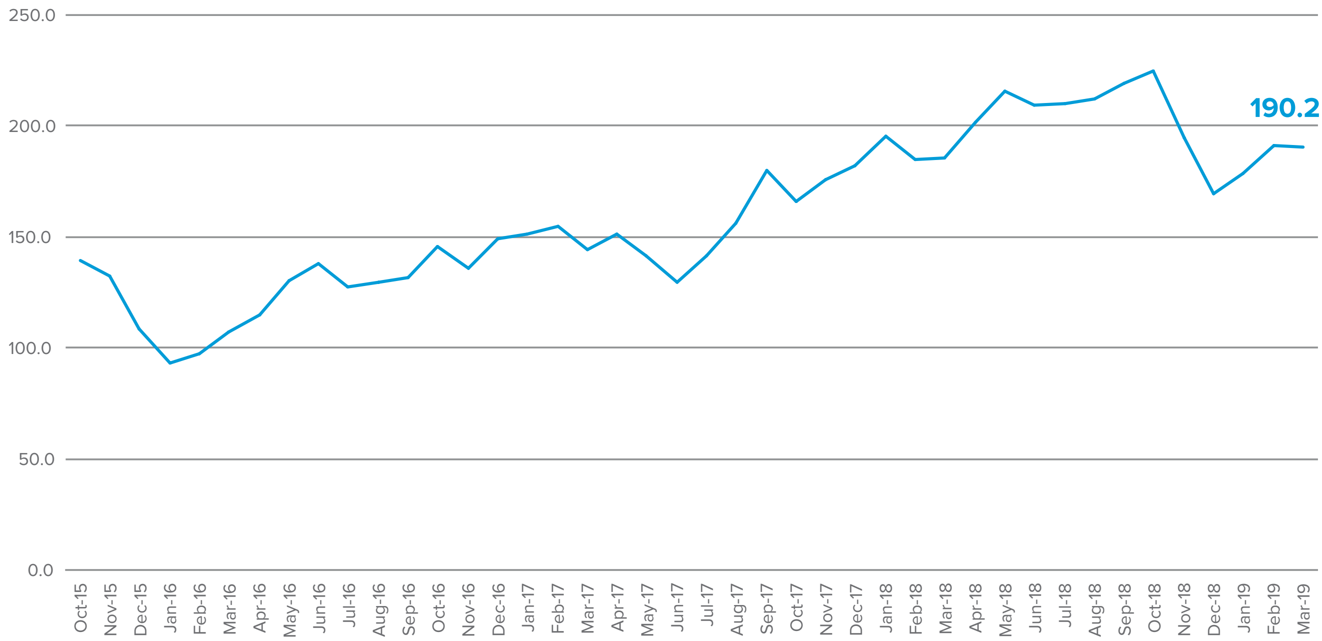
Source: Ratings Agencies - 12th April 2019

Manufacturers

	Fitch	Moody's	S&P
Airbus Group	A-(stable)	A2(stable)	A+(stable)
Boeing	A(stable)	A2(stable)	A(stable)
Bombardier	B-(stable)	B3(stable)	B-(stable)
Embraer	BBB-(stable)	Ba1(stable)	BBB(stable)
Rolls-Royce	A-(stable)	A3(neg)	BBB+(neg)
United Technologies	-	Baa1(stable)	BBB+(neg)

Source: Ratings Agencies - 12th April 2019

US Gulf Coast kerosene-type jet fuel (cents per US gallon)



Source: US Energy Information Administration

Recent commercial aircraft orders (February-April 2019)

Customer	Country	Quantity/Type
Undisclosed	Undisclosed	6xQ400
Air Peace	Nigeria	10 E195-E2
Uganda Airlines	Uganda	2xA330-800
Lufthansa Group	Germany	20xA350-900
Lufthansa Group	Germany	20 787-9
Undisclosed	Undisclosed	20xA320neo
Private customer	Undisclosed	1xA350-900
StarLux	Japan	5xA350-900s: 1xA350-1000
Vietjet Air	Vietnam	20x737Max 8; 80x737Max 10
Bamboo Airways	Vietnam	10 787-9
International Airlines Group	UK	18x777X

Lufthansa Group ordered 20xA350-900

Based on *Airfinance Journal* research up to 9/04/2019

Aircraft list prices - new models

Model	$ million
Airbus (2018)	
A220-100	81
A220-300	91.5
A319neo	99.5
A320neo	108.4
A321neo	127
A330-800neo	254.8
A330-900neo	296.4
A350-900	317.4
A350-1000	359.3
Boeing (2018)	
737 Max 7	96
737 Max 8	117.1
737 Max 9	124.1
737 Max 10	129.9
777-8X	394.9
777-9X	425.8
787-10	325.8
Embraer (2018)	
E175-E2	51.6
E190-E2	59.1
E195-E2	66.6

As of 12/04/2019

Current production aircraft values ($ millions)

Model	Current market value*
Airbus	
A220-100	33.2
A220-300	37.8
A319	34.3
A319neo	37.2
A320	43.7
A320neo	49.3
A321	51.8
A321neo	57.1
A330-200	85.9
A330-200 Freighter	94.4
A330-300	98.2
A330 900 (neo)	110.4
A350-900	149.4
A350-1000	169
A380	219.2
Boeing	
737-800	46.3
737-900ER	48.6
737 Max 8	51.3
737 Max 9	52.5
747-8I	155.6
747-8F	183
777-300ER	153.9
787-8	118.5
787-9	143.6
787-10	150.5
ATR	
ATR42-600	16.2
ATR72-600	20.2
Bombardier	
CRJ700	24.1
CRJ900	26.2
CRJ1000	28.2
Viking Q400	20.7
Embraer	
E175	28.5
E190	32.1
E190-E2	34.5
E195	33.9
Sukhoi	
SSJ100	23.3

*Based on Istat appraiser inputs for Air Investor 2019

Lease rates ($'000 per month)

Model	Low	High	Average
Airbus			
A220-100	204	262	233
A220-300	276	303	289.5
A319	230	283	256.5
A319neo	266	293	279.5
A320	295	353	324
A320neo	340	383	361.5
A321	350	424	387
A321neo	380	444	412
A330-200	640	745	692.5
A330-200 Freighter	657	715	686
A330-300	690	833	761.5
A330 900 (neo)	801	872	836.5
A350-900	1,050	1,195	11,22.5
A350-1000	1,233	1,342	12,87.5
A380	1,503	1,950	17,26.5
Boeing			
737-800	310	364	337
737-900ER	330	394	362
737 Max 8	350	394	372
737 Max 9	368	404	386
747-8I	990	1,264	1,127
747-8F	1,178	1,570	1,374
777-300ER	1,050	1,300	1,175
787-8	815	931	873
787-9	950	1,200	1,075
787-10	1,053	1,146	1,099.5
ATR			
ATR42-600	117	153	135
ATR72-600	144	185	164.5
Bombardier			
CRJ700	153	220	186.5
CRJ900	170	235	202.5
CRJ1000	182	255	218.5
Viking Q400	140	200	170
Embraer			
E175	205	240	222.5
E190	230	275	252.5
E190-E2	239	263	251
E195	211	280	245.5
Sukhoi			
SSJ100	153	205	179

Commercial aircraft orders by manufacturer

	Gross orders 2019	Cancellations 2019	Net orders 2019	Net orders 2018
Airbus (31 March)	62	-120	-58	747
Boeing (8 January)	95	-4	91	893
Bombardier	15	0	15	47
Embraer	10	0	10	47
ATR	3	0	3	52

Based on Airfinance Journal research and manufacturer announcements until 12/04/19

How three-times 'no' will result in 'yes'

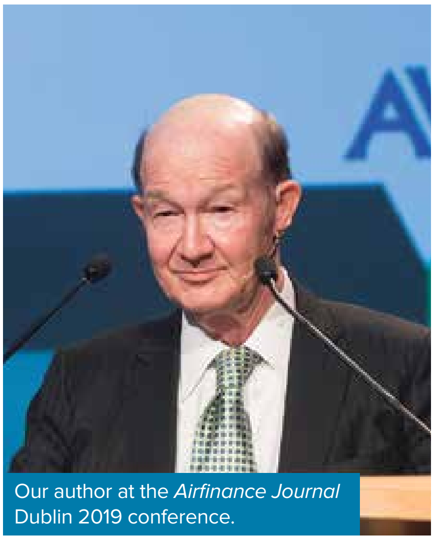
Adam Pilarski, senior vice-president at Avitas, believes Boeing's New Mid-Market Aircraft will go ahead despite good reasons for the programme to be shelved.

The biggest decision facing aircraft manufacturers is the New Mid-Market Aircraft (NMA) considered by Boeing. This would involve the design of a brand new platform in between narrow and small widebodies. Such an offering would cost a fortune but potentially change the existing landscape of aircraft manufacturing. It could be the prelude to the development of a brand new replacement for existing narrowbodies, a possibility discussed and analysed for years but eventually shelved in favour of the re-engining programmes adopted by Airbus and Boeing. A launch of the NMA would drastically change realities for manufacturers, engine providers, airlines and financiers. It would alter the future values of existing aircraft.

The NMA is defined as flying 220 to 280 passengers at ranges of 4,000 to 5,000 miles in twin-aisle comfort at single-aisle economics. Boeing believes there is a market of about 4,000 to 5,000 units for such a platform planned for introduction circa 2025. The question is why would Boeing launch a dramatically new aircraft? Short term, the reality is that today the segment for such an aircraft is the Boeing 757 replacement. In that market Airbus is outselling Boeing by wide margins and is talking about further stretches and enhancements to its Airbus A321neo. It dominates that particular market segment. Hence, after continuous sales losses some analysts believe Boeing has to act.

In the long term, Airbus and Boeing are in a clear duopoly situation. With the acquisition of the CSeries part of Bombardier by Airbus and the tie up of Boeing with Embraer this duopoly is even more pronounced. Nothing on the horizon threatens it, not the Russian, Chinese or Japanese forthcoming products. Action by Boeing will affect only Airbus. The other potential competitors are years away from being real threats.

So, again, why would Boeing launch an expensive new programme? It does not make sense in the short term. A programme whose first deliveries are years away cannot salvage whatever campaigns are being lost right now to the A321neo. These sales losses are gone



Our author at the *Airfinance Journal* Dublin 2019 conference.

> *Why would Boeing launch a dramatically new aircraft? Short term, the reality is that today the segment for such an aircraft is the Boeing 757 replacement.*

Adam Pilarski, senior vice-president, Avitas

and cannot be recovered. So the answer as to whether to launch the NMA should be a resounding "No". The NMA may give Boeing an advantage in the long run but it is hard to believe it will drive Airbus out of business. A successful new product in this market segment will lead Airbus to design its own new product. At the moment, Airbus does not feel it needs added expenses because it believes it is winning the current battles. But it has the technological abilities to develop a new product that would truly be competitive to the Boeing NMA. If both of the duopolists have successful new products, the whole market will not increase. After spending tens of billions of dollars, Airbus and Boeing will probably keep their market shares at today's levels.

So the conclusion from a long-term strategic view as to whether to launch the NMA is also "No". The third "No" comes from the financial side. Boeing is not in a desperate financial situation and does not need to gamble and spend serious resources to change its very comfortable financial situation. It is blessed with record backlogs, profits and stratospheric share values.

So why do I believe the final answer will be a "Yes"? It is important to remember that Boeing is still trying to recover from the 787 debacle. That first all-new aircraft in a generation produced a fairly successful platform but was very late, had serious birthing problems and suffered a grounding after battery problems. Big parts of the problems were related to the way Boeing was planning to produce the aircraft, giving up control of parts of the manufacturing process to outsiders. To regain its mojo, Boeing needs to have a clear success relying on its own internal resources. So the emphasis is not on the famed "moonshot" derided by its chairman. It is rather a simple platform with better control by Boeing on all aspects of the manufacturing. It also means a different business structure. The reorganisation of Boeing into three sectors (commercial, military and services) points to the way the NMA will be designed and produced. Boeing sees this as a kind of cultural revolution without the political connotation – a totally new way of producing aircraft for now and in the future.

The new product will lead to a new brighter future and let the current leadership leave its imprint on Boeing and on the future of aviation. So, will it happen? Right now the leadership has more imminent problems related to the Max. But I do believe that in a traditional Boeing fashion, the US manufacturer will take its sweet time to launch the programme – with a choice of one engine. It will be a few years late compared with the proposed 2025 service entry. But it will happen and eventually will produce another great aircraft in the best Boeing tradition.