

Issue

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# FLIGHT DAILYNEWS

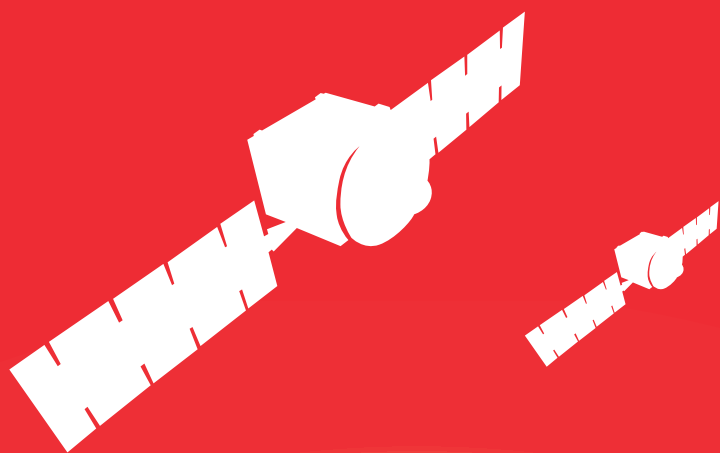
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## REIMAGINING INFLIGHT WI-FI



## g for a lift

public debut as it battles financial crisis at home



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at NBAA BACE, alongside Joby  
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## Number one fan

A "longtime Cessna Citation enthusiast" is lined up to become the launch customer for Textron Aviation's first CJ4 Gen3 light business jet.

Ryan Samples, a pilot and business owner, has entered a purchase agreement with Textron Aviation and is expected to take delivery of the first example of the CJ4 Gen3 in 2026, following the type's targeted certification, the company revealed yesterday.

Textron also said yesterday that its CJ4 Gen3 prototype flew for the first time in early October.

"Our longstanding appreciation for Citation jets has grown with each new model," Samples says. "I can't wait to elevate our travel capabilities with this remarkable aircraft."

The CJ4 Gen3 is part of a trio of Gen3 variants unveiled by Textron Aviation at the show, including the M2 and CJ3 platforms. The jets will feature Garmin's emergency auto-land as a standard feature, and the CJ4 Gen3 will be the first with Garmin's new G3000 Prime avionics suite.

Samples is pictured right with Lannie O'Bannon, senior vice-president global sales and flight operations for Textron Aviation.

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# Looking for a lift

Troubled Lilium gives jet its US public debut as it battles financial crisis at home

**Jon Hemmerdinger &  
Pilar Wolfsteller**

One of the most innovative in-development electric vertical take-off and landing (eVTOL) aircraft is making its public US debut on the show floor here just as the company behind it faces fresh financial uncertainty.

German start-up Lilium insists the jet – which features 30 90-degree rotating battery-electric motors integrated into its wings and canard flaps – has strong prospects in the US market. It has just announced Texas-based brokerage and management company EMCJET as its



first stateside private sales dealer.

The company displayed the same model (pictured) at the Farnborough air show in July before shipping it by air to Las Vegas, it says.

News broke last week that the German government denied Lilium a €50 million (\$54 million) loan

guarantee, casting doubt about the company's future. Lilium declines to comment about its financial position.

It has generated \$1.5 billion in investments and was counting on the loan, which would have been paired with a loan from the state

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Martel: Global 8000 is on track for service entry next year

## Bombardier builds up for Global 8000

Jon Hemmerdinger

Bombardier has started manufacturing major structural components for the first production example of its ultra-long-range Global 8000, a business jet that is set to succeed the Global 7500 as the Montreal airframer's flagship.

Meanwhile, the company continues working to significantly grow its services and defence businesses, aiming for those sectors to generate 50% of revenue by 2030.

"Despite all the great things we have in the 7500... our engineers have pushed the limit even farther," Bombardier chief executive Eric Martel said of the Global 8000 at the show yesterday. "Flight testing is progressing to plan. We are on track for the entry into service as early as next year."

Bombardier has started manufacturing structural components for the first production example of the Global 8000 at facilities in Saint-Laurent in Montreal, Red Oak in Texas and Queretaro in Mexico. Martel

notes that the wings are taking shape in Red Oak, and the rear fuselage is being assembled in Queretaro.

"The manufacturing process for what will be the industry's fastest business jet – the impressive ultra-long-range Global 8000 – has begun," says Bombardier executive vice-president of manufacturing and IT David Murray. "Our engineering and production teams continue to demonstrate unmatched levels of expertise, pride and innovation."

Bombardier assembles Globals at its recently

opened facility at Toronto Pearson International airport.

Launched in 2022, the 8,000nm (14,816km)-range Global 8000 will be capable of flying routes including Dubai-Houston, Singapore-Los Angeles and London-Perth. The 8000 builds on the current Global 7500, using the same wing, fuselage and GE Aerospace Passport engines.

Bombardier completed the first Global 8000 flight in May 2023.

The 19-passenger aircraft can fly at speeds up to Mach

0.94, and at 51,000ft. The jet has fly-by-wire flight controls, cockpit side sticks, head-up displays, enhanced vision systems and synthetic vision systems.

"Our customers will soon be able to step aboard an aircraft that sets the standard as the fastest and longest-range purpose-built business aircraft in history, allowing them to reach destinations farther and faster than ever before," says Bombardier executive vice-president of aircraft sales and defence Jean-Christophe Gallagher.

The Global 8000 is a long time coming.

Bombardier revealed development of the jet and its then-sister ship, the Global 7000, in 2010. In 2018, the company upped the 7000's range and renamed that aircraft the Global 7500. Seemingly little progress was made on the 8000 until Bombardier launched development four years later.

The team has completed about 300h of Global 8000 flight testing, says Bombardier executive vice-president of engineering and product development Stephen McCullough. "We are getting very close to the conclusion... The aircraft is behaving flawlessly."

The company, which several years ago spun off its commercial aircraft business and its rail division, expects to achieve revenue of more than \$9 billion annually by 2025, up from \$8 billion in 2023.

Bombardier has been seeking to significantly boost revenue from sales of aftermarket services and of militarised variants of its business jets. The company has opened new service centres at Farnborough, Opa-Locka near Miami, and Singapore.

In 2020, Bombardier's services and defence sales accounted for 28% of its revenue, though it plans for that figure to hit half of revenue by 2030.



Chabbert: Kodiak 900 gaining traction across several markets

## Daher talks up TBM and Kodiak

Daher yesterday outlined fresh product line developments and championed its top-of-the-range Kodiak 900 and TBM 960, both of which it is showcasing on the static display.

The six-seat TBM 960 single-engine turboprop was unveiled in April 2022, the fifth evolution of the TBM 900 turboprop. "It's the fastest selling aircraft in the TBM family for which we have a backlog of 100 aircraft – over two years of production," says Nicolas Chabbert, senior vice-president for the French company's aircraft division.

The Kodiak 900 has secured a similar backlog. Launched in July 2022, Chabbert says the 10-seat, Pratt & Whitney Canada PT6A-140A-powered unpressurised aircraft is "gaining traction" with cargo, corporate, business, charter and medevac customers across the globe.

Daher is displaying its Kodiak 900 flight-test aircraft in a multi-mission configuration featuring a quick-change interior and camera/sensor turret.

Daher also announced at NBAA BACE

that it will integrate the first-generation Kodiak 100's Hartzell five-blade composite propeller with a pitch latch function that enables float-equipped aircraft to be easily manoeuvred on water.

The five-blade prop was introduced for Kodiak 100s – now in its third generation and dubbed the Series III – in 2023 and Daher says the new pitch latch function "provides greater control and safety because the propeller can be set in fine pitch position during engine start-up and shut down". The five-blade prop and the pitch latch function are also available as a retrofit on in service Kodiak 100.

"This marks another improvement for our multi-role Kodiak aircraft family which is increasingly in demand by government agencies, commercial operators and private owners," says Chabbert.

The company recently began offering the Garmin G1000NXi next generation flight deck as a retrofit for owners of the first-generation Kodiak 100.



# Keeping up app-earances

Howard Hardee

Aviation training company CAE has revealed a new pilot-training app compatible with the Apple Vision Pro mixed-reality headset, which it touts as a potential “game-changer” for aspiring aviators.

Showcased to reporters on the eve of the show, the app is designed to surround pilots-in-training with a highly realistic flight deck – in this case, that of the Bombardier Global 7500 business jet, though the platform can be programmed to simulate the flight decks of other business, commercial and advanced air mobility aircraft in the future.

After donning the headset, reporters were transported from an empty conference room to the cockpit of the Global 7500, with options to view a mix of the simulated flight deck and the real-world environment – or to be entirely immersed in the digital world.

The app is envisioned as a tool that aspiring pilots can interact with at home or in a hotel room – potentially boosting their flight-deck



CAE's Sofia Sofia with the device

familiarity before entering ground school simulators.

Erick Fortin, CAE's senior director of incubation, envisions the technology appealing to younger,

technology-proficient pilots-in-training as well as older generations seeking type ratings on new aircraft types.

“We believe we are in the

best position to insert this into the curriculum, given our expertise,” Fortin says.

Emmanuel Levitte, CAE's chief technology and product officer, says the app “will

allow pilots to familiarise themselves with the flight deck, practise critical procedures and develop muscle memory for key functions from anywhere”.

“It will allow pilots to engage with realistic flight-deck environments to further ensure they are ready for their full-flight simulator sessions and become even better prepared for any situation,” he adds.

When set to “flight deck interaction mode”, the app allows pilots to manipulate cockpit controls with natural-feeling motions.

“In the real aircraft, for example, the main battery switch needs to be pulled before being flipped,” CAE says. “The same can be done in this spatial computing experience.”

“Guided mode” prompts the pilot through sequences of pre-flight procedures, while “exploration mode” allows them to touch a specific control and view a description of its function.

Still in an advanced testing phase, the app will be rolled out on the Global 7500 platform in the spring of 2025. Fortin says the “dream is for all pilots to have one at home”.

## Business aviation's \$50 billion boost

Business aviation's annual contribution to the US economy is expected to climb by over \$50 billion within five years bringing the industry's annual input to \$183 billion.

This is according to a study – one of two published on the eve of the show – of US-based private jet financiers and brokers commissioned by Airbus Corporate Jets (ACJ).

With fewer than 500 of the 5,000 public-use airports in the USA currently served by commercial airlines, business aviation has become a key and often indispensable component of the country's transportation system. Some 85% of survey respondents believe the significance of this role will continue to grow over the next five years.

The ACJ study also reveals over 60% of financiers and brokers expect the sale of large business jets to increase over the next five years driven by a desire to upgrade from older to new-generation models – particularly high-end,

large-cabin and midsize business jets.

Airbus says these sectors “are increasing at a faster rate than other categories due to their range and capacity, and because OEMs are driving interest with the introduction of new models”. Between now and 2027, 84% of those surveyed believe the focus on top-end and midsize jets will increase.

The second study from ACJ reveals 90% of senior executives at large corporations expect widespread availability and take-up of sustainable aviation fuel (SAF) will lead to an increase in US companies using private jets. Similarly, 90% of respondents expect SAF affordability will lead to an overall increase in the sale of business aircraft.

The report also shows the growing role played by the business aviation industry in supporting humanitarian causes with two thirds of senior executives of large US corporations open to using their aircraft for philanthropic purposes.

## Congressmen back job creation



Two US lawmakers told NBAA attendees yesterday that industry and government must push harder to ensure the aviation industry maintains a healthy pipeline of incoming workers.

The Congressmen, both architects of this year's Federal Aviation Administration funding bill, also urged the industry to be patient with the pace of sustainable aviation fuel (SAF) adoption.

“We need to be doing a little bit better job of promoting what the industry is about,” Republican Sam Graves (*centre*), chair of the House Committee on Transportation & Infrastructure, said during NBAA's Newsmakers Lunch on the eve of the show. “As government, we need to do everything we can to try to help with those mountains they have to climb in order to break into that world.”

Graves was joined by committee ranking Democrat Rick Larsen (*right*), who said: “We're going to be purposeful

about tracking the next generation of aviators, of pilots, of mechanics, of air traffic control.”

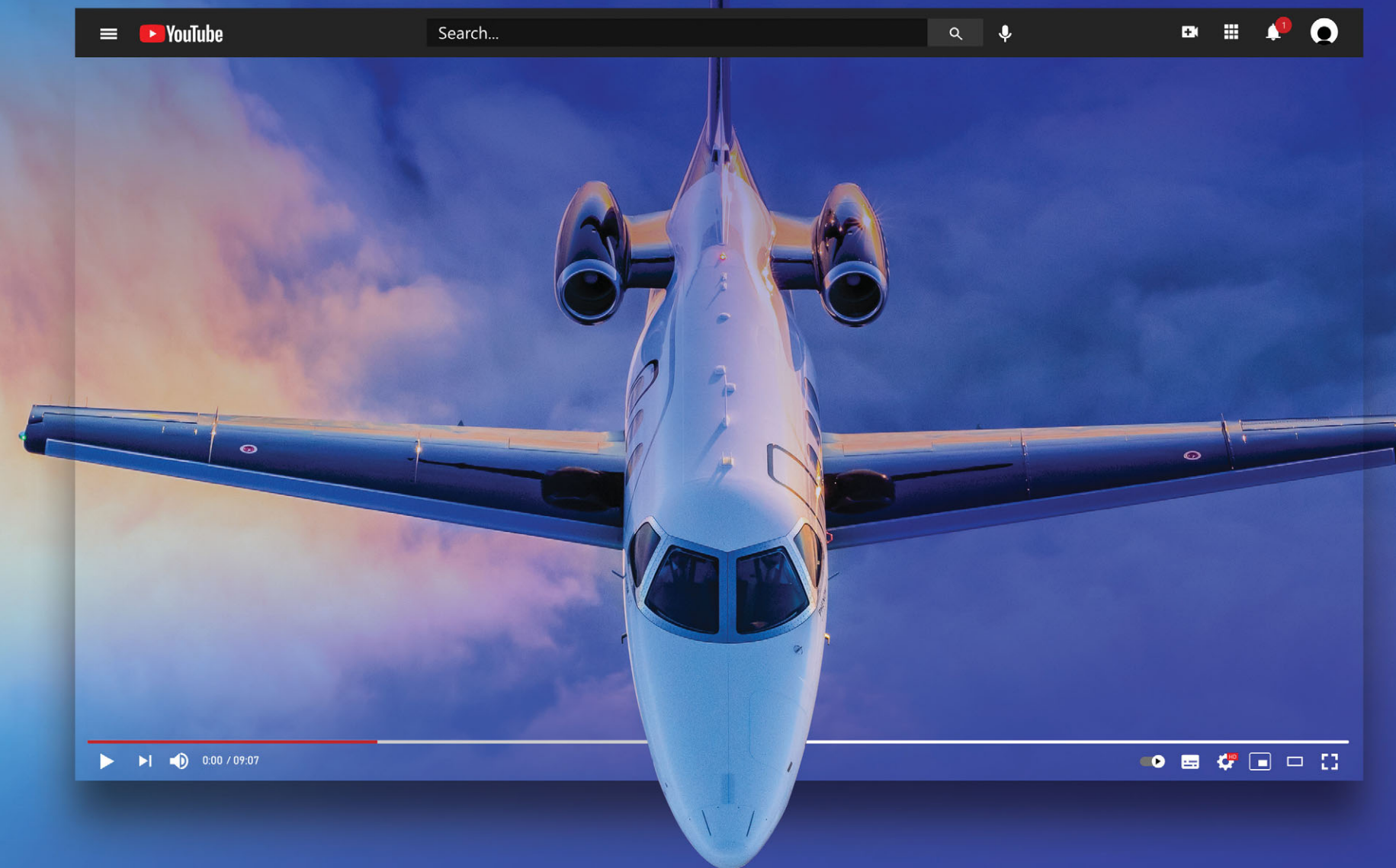
Graves and Larsen helped craft the reauthorisation bill, which had bipartisan support and became law in May. Among its many provisions, the law set aside grants for use in helping new pilots, aircraft mechanics and aerospace workers join the industry.

Both lawmakers also expressed optimism about the promise of SAF, but cautioned about how quickly SAF can be adopted.

“We have got to be careful that we don't force it. We have to let this grow... and [make] sure... it is as safe as it can possibly be,” says Graves. “We are working on that.”

“It's not an overnight thing. It has to be a... slowly growing thing,” Larsen adds.

The event was moderated by NBAA chief executive Ed Bolen (*left*).



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# Generation three

Textron is upgrading its Citation light jets once again, announcing enhanced versions of M2, CJ3, and CJ4 at show

Howard Hardee

Textron Aviation is rolling out a series of upgrades to its Cessna Citation family of light business jets that will represent “Gen 3” variants of the M2, CJ3 and CJ4 platforms, announcing the move at the show yesterday.

“I really think this shakes up the entire light jet industry and [represents] enormous enhancements to our existing product line-up,” says chief executive Ron Draper.

The jets will come with Garmin’s emergency auto-land system as a standard feature, which the company says builds off auto-throttles introduced in the Gen2 series. The updates are based on feedback from Textron Aviation’s customer advisory board.

“This is the culmination of those discussions,” says Jimmy Beeson, Textron Aviation’s director of product development. “This particular system provides a means of landing the aircraft in the unlikely event that the pilot is incapacitated.”

The auto-land system will

be a critical feature for the primarily owner-operated light jets, he adds. The system can be engaged via several methods. The first is manual, as passengers can push a button in the cockpit to initiate an automated landing.

“There is also some logic built into the system, aside from the button, that will actually look for a pilot’s interaction and detect pilot incapacitation,” Beeson says. “Every few minutes, it checks and will automatically go into emergency mode when the pilot is not interacting with the system on a continued basis.”

## Auto-land system

When engaged, the auto-land system takes control of the aircraft, informs air traffic control (ATC) of an emergency and calculates the most suitable airport for an emergency landing – all while tracking and avoiding dangerous weather formations. The system also provides flight updates and opportunities to interact with ATC for passengers throughout the protocol.

“The aircraft will descend, conduct the approach,

conduct the landing, brake the aircraft and then shut down the engines and give passengers instructions on how to depart,” Beeson says.

In the event of rapid de-pressurisation of the cabin, the aircraft would automatically descend to around 15,000ft and wait for the pilot to interact with the system, potentially after regaining consciousness. No interaction from the pilot would prompt the emergency auto-land sequence.

Draper says Textron Aviation does not view the auto-land as a step toward fully autonomous flight in the future, but rather an important safety feature for single-pilot aircraft.

“The technology is out there; it’s a question of [whether] passengers accept it,” he says. “It’s possible to design an airplane that can take off and land without a pilot... I don’t know that passengers want to get on [an aircraft] with nobody up front yet, but that might happen one day.”

The Gen3 upgrades come as part of a continuum of improvements that Textron, which manufactures Beechcraft and Cessna aircraft, has

rolled out in recent years as it builds on its light jet platforms.

Textron Aviation announced updates to the M2 variant in 2021 – primarily refreshing the type’s cabin – and last year added auto-throttles as standard equipment to the M2 Gen2, which it hopes to certify and start delivering to customers in 2025.

## Certification

The aircraft manufacturer revealed the Gen2 variant of the Cessna Citation CJ3 at last year’s NBAA BACE, including cabin and cockpit changes, plus an auto-throttle system.

The M2 Gen 2, CJ3 Gen 2 and Citation Ascend are all on track to clear Federal Aviation Administration certification next year, Draper says. The long-awaited Beechcraft Denali turboprop, which is too equipped with Garmin’s auto-land technology, is also targeted for service entry in 2025.

Certification of that clean-sheet aircraft has been pushed back repeatedly, with certification of the type’s GE Aerospace Catalyst engine reportedly

holding back the process.

To date, a trio of Denali prototypes have logged 950 flights and a total of about 2,250 flight hours.

“We’ve got four programmes to certify in 2025; our engineering team has a lot of work on their plate,” Draper says. “The fourth one is the Denali – we’re very excited about that airplane. We’re taking in back to NBAA, and we’re really... locking down the engineering. Now we’ve got to start certification flying with the FAA and work through that last certification process over the next year.”

He adds that Textron Aviation is “excited about its potential”, defining the Denali’s prospective market as “that single-engine turboprop” with a pressurised cabin. It will compete primarily with the Daher TBM series and Pilatus PC-12, according to Draper.

“That market sells 180 airplanes a year,” he says. “And we don’t have a product in that market space now... The Denali is going to come in at the larger end of that market, really kind of where the PC-12 sits, and you know, we think this is going to sell;

we think we should get our fair market share.”

Draper declines to describe GE Aerospace’s progress with the Catalyst, asserting that the turboprop engine is “in a steep glide slope to certification”.

Beeson adds that “the market is very excited about the Beechcraft Denali”. The aircraft has appeared for the past two years at the EAA AirVenture Oshkosh show and at NBAA BACE in 2023, generating strong customer feedback.

“They love the cabin size,” he says. “It feels like jet inside, as far as the fit and finish, and we’re wider and taller than a PC-12 – and more fuel efficient. Those are good specs.”

Textron Aviation has built about 250,000 aircraft – more than any aircraft manufacturer in the world, say company executives – including some 10,000 jets and 10,000 turboprops. Most of its market is based in North America, with strong presences in Latin America, Europe and the Middle East.

The aircraft maker – whose main brands date back to the pre-Second World War era – has not been immune from industry-wide supply chain issues as aerospace companies continue their years-long recovery from the Covid-19 pandemic. Parts and materials are sourced more easily now than during the lows of mid-2022, but Draper says that “not a lot has changed” during the past 12 months.

“We wouldn’t say it’s all the way back to what we consider healthy,” he says. “We have less suppliers with problems but we still have some suppliers struggling to meet our need dates, so we’re still seeing obsolescence. We’re still seeing material substitutions being necessary.”

Textron Aviation has

also been battling labour issues. A machinists strike in Wichita appeared in late September to have derailed the company’s plan to exhibit at the NBAA show. But then the company reversed course on 2 October, saying that it “will return” to the show “with a static display of industry-leading aircraft”.

Textron Aviation has a

Cessna Citation Longitude, Latitude, CJ4 Gen2 and M2 Gen2 on the show’s static display at Henderson Executive airport. It is also displaying mock-ups of its Citation Ascend and CJ3 Gen2.

Textron Aviation did on the eve of the show settle the month-long strike when machinists ratified a new five-year deal.

The manufacturer has observed a longer-term trend of workers needing more up-front training upon being hired. In general, encouraging people to enter the aerospace manufacturing trade has been difficult.

“It seems like every industry, especially the manufacturing industry, is talking about how we get talented people, and we’re no exception to that,” Draper says. “It’s a big challenge and a big opportunity for us... There’s a shortage out there, and there’s a growing skills gap. You know, 30 years ago, it was easier to find people who organically inclined and knew how to use tools and those types of things. Today, that’s less the case.”

Textron Aviation is seeking to “rapidly expand” its pipeline of skilled workers, including by improving its on-boarding and training processes, he adds. “If they’re not walking in the door with A&P certifications, or they’re walking in the door with less skills, how are we going to take a less-skilled person and very rapidly make them a highly skilled person in our industry?”

To that end, the aerospace manufacturer has remodelled a former parts warehouse into a 9,290m (100,000sq ft) training centre that will serve as a “one-stop” for prospective and newly hired workers, Draper says. “We’re very excited and we think this will help go a long way towards the recruiting and training of those skilled employees in the future.”



Textron says the launches of the trio of Gen3 variants – M2 (above), CJ3 (below) and CJ4 (left) – will ‘shake up’ the light-jet sector





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# IADA: a great time to be used aircraft buyer

Murdo Morrison

A great market for buyers: that is how the head of the International Aircraft Dealers Association describes the state of used aircraft trading, three years after post-pandemic demand led to a supply drought.

IADA is at NBAA BACE in force, with 87 of its members in attendance, having yesterday released its third quarter pre-owned aircraft market report, which highlights a rise in optimism throughout the sector.

"It's the best third quarter in terms of closed transactions since 2020," says IADA executive director Wayne Starling. "We're continuing to see a really nice trajectory

since the pandemic."

During the immediate aftermath of the Covid-19 shut-downs, the percentage of the total fleet of business aircraft that was for sale shrunk to under 2%. It has since returned to around 8%, says Starling, and while that is still below a historic average of around 10%, it has swung the balance from those selling to those buying.

"There are more options available," he says. "During Covid, a plane would go on the market and there would be six or seven offers coming in within an hour. Now buyers can take their time to choose."

However, despite used aircraft prices coming down, dealers are still upbeat. "Our members are very positive. We don't really see any slowdown in activity,"

says Starling. "Normally just ahead of a presidential election, we would see a lot of hesitancy, but it doesn't appear to have happened this time."

In the quarterly report, IADA dealers said they had closed 373 deals in the July to September period, compared with 324 in the same three months last year, and 331 in the third quarter of 2022.

"The report reflects renewed confidence in the global pre-owned business aircraft market, driven by increased inventory listings, higher yet stabilising service costs, and recognition of geopolitical uncertainties," says IADA. "Following a period of fluctuation, the global pre-owned bizjet sector appear to be settling into a back-to-work rhythm, with a marked rise in inventory listings."



Starling: Purchasers can take their time to choose



## Operators get Nimbl with one-click access

US aviation safety firm Nimbl rolled out a new digital dashboard at the show yesterday. It provides one-click access to operators' aviation manuals and safety objectives, plus a new tool that streamlines risk assessment.

Mark Baier (pictured), chief executive of Nimbl – formerly known as AviationManuals – said that the dashboard is designed with "all types of operators" in mind, especially those that lack an "internal manual-compliance department".

"Some of our operators are small," he says. "They might have a \$60 million asset, but there are only three-to-five people operating it. They don't have the time to stay on top of all the regulatory changes, they don't have the tools to implement an SMS themselves."

The company's "Quick FRAT" system reduces the number of risk-assessment questions operators must answer on pre-flight checklists to eight from 25.

The company says that the streamlined process does not sacrifice safety: "Each risk assessment includes a series of mitigation recommendations that were carefully crafted by the Nimbl team based on their years of experience working with flight operations around the globe."

## JetNet iQ bullish on outlook

While geopolitical tensions, regional wars, economic instability and supply chain issues are shaking optimism in the global business aviation market among owners and operators, demand and pricing for business jets and turboprops remains strong and the outlook for the industry over the next decade is bullish.

That is the analysis of the business aviation market intelligence specialist JetNet iQ report issued at the start of NBAA BACE.

"The industry saw a mix of rational and irrational exu-

berance in the post-Covid era which drove demand for new and used aircraft to unprecedented levels," says JetNet iQ managing director Rolland Vincent.

The inventory of pre-owned business jets hit a record low of 3.5% in 2022 but has now climbed to a "very respectable" 7.5%, he says. Traditionally a healthy pre-owned inventory would represent between 10-12% of the global fleet.

Similarly, the fleet of pre-owned turboprops has climbed to 4.5% today – up from 3% in 2022. "We went

through a period where aircraft were being sold without an inspection because demand was so high. That is less likely to happen now as the market slowly rebalances," says Vincent. "But the market is still hot".

Sales of new aircraft are also strong, with the major OEMs recording backlogs of between 18 and 24 months. By the end the second quarter, JetNet says the total value of the business jet backlog was over \$51 billion, an increase of \$1 billion on the previous year.

Over the next decade, the company projects deliveries of 8,600 new business jets and 4,300 turboprops with a combined value of \$287 billion (in 2024 US\$ terms) and "much of it back-end loaded," says Vincent.

He describes supply chain recovery as "a stubborn and lingering challenge to production and delivery rates for the next several years."

Sustainability is also a "key issue that must be addressed by the global industry now and into the future to 'maintain positivity and improve the industry's image'". Vincent argues the US manufacturers "are way behind" their European counterparts in terms of creating a sustainable community. "We must do better," he says.



Vincent: Irrational exuberance in post-Covid era

BillyPik



## In brief...

## Exceptional Erick

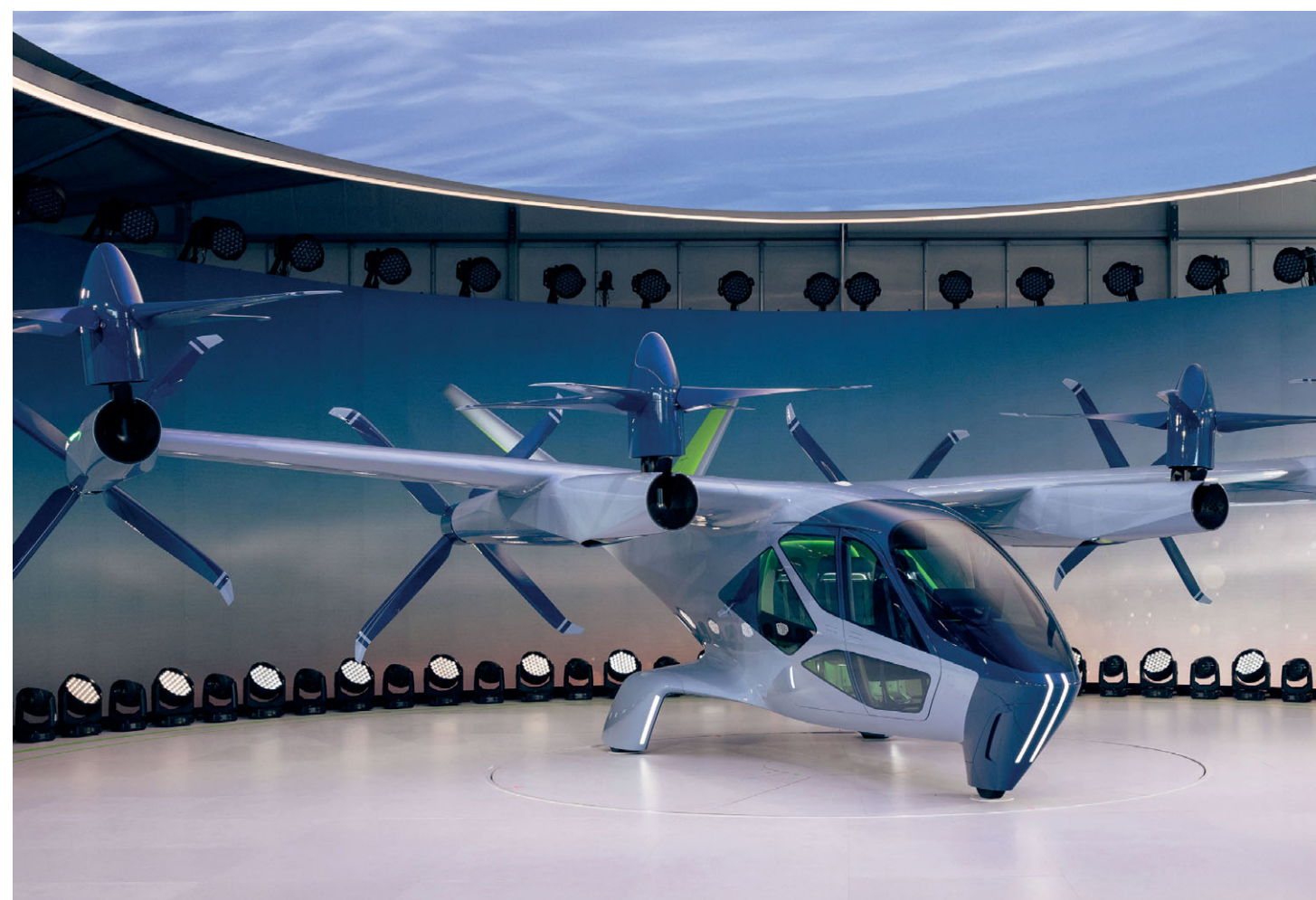
The National Business Aviation Association has awarded Erick Lanier its 2024 Cheri Rudd Memorial Scholarship for "exemplifying business aviation's commitment to exceptional customer service". Lanier wins up to \$2,500 in scholarship funds to attend accredited professional training courses focused on advanced customer service. The annual scholarship is named in memory of NBAA's long-time manager for office coordination who "established a professional and cordial standard of customer service that epitomised the association's dedication to excellence"

## Avfuel pumps up SAF offer

Avfuel is expanding its sustainable aviation fuel offer with energy company Valero in the southeastern USA. The 30% SAF blend is produced by Diamond Green Diesel, a joint venture between Valero and Darling Ingredients, and uses lipids such as used cooking oil in its formulation. Avfuel, a fuel delivery specialist with a network of more than 675 branded FBOs, says the initial focus will be on making SAF more available at its FBOs in Florida.

## Jet Aviation boosts US fleet

Jet Aviation says it has added 39 aircraft to its managed fleet in the USA this year, including 16 on its Part 135 certificate. The Swiss company's 16 Part 135 examples range from the Embraer Praetor 600 to Gulfstream G600. The General Dynamics subsidiary manages over 300 aircraft globally.



Supernal

# Supernal partners with Blade and Clay Lacy

Murdo Morrison

Advanced air mobility (AAM) developer Supernal is today announcing two agreements with NBAA BACE exhibitors. New York-based helicopter booking platform Blade will work with the Hyundai Motor Group subsidiary to "explore opportunities to develop AAM networks and fleet operations". This will include "studying AAM use cases" in various markets for Supernal's S-A2 electric

vertical take-off and landing (eVTOL) product (pictured).

Meanwhile, Supernal will work with Clay Lacy to develop its fixed-base operations for eVTOL services. It marks the developer's first FBO partnership.

As part of the three-year Blade pact, Supernal will "provide insights on technological and operational nuances to support the development of Blade's future AAM service offerings".

Blade will provide Supernal with "feedback on

aircraft design and safety, upgradeability, passenger comfort and flexibility for various operating markets".

"As Supernal prepares to finalise our eVTOL features, it is critical we collaborate with experienced commercial partners like Blade to ensure our eVTOL's cabin features align with passenger expectations for comfort, safety and efficiency in the next generation of inter-city mobility," says David Rottblatt, senior director of strategy and commercialization, Supernal.

The five-year partnership with Clay Lacy will focus on two FBOs – Orange County and Van Nuys in southern California. This is the region where Supernal plans to launch operations. Eventually, say the two companies, "learnings" will be used to "prepare Clay Lacy's broader FBO network for AAM".

Supernal plans to deliver its first eVTOL vehicles to operators in 2028. While Supernal is not exhibiting at NBAA BACE, it does have a "virtual reality experience" in Blade's lounge at the static display.

## Standard Aero on the acquisition trail

Standard Aero is at the show riding high after its successful partial listing on the New York Stock Exchange earlier this month by global investment firm Carlyle.

The Scottsdale, Arizona-based company is one of the world's leading independent engine maintenance, repair and overhaul houses and derives around a quarter of its revenues from business aviation, with commercial aviation and the military market making up the difference.

Standard Aero's shares opened

at \$31, 29% over the offer price, on its 2 October debut, and have stayed around that level. Carlyle remains the majority stakeholder.

The company, which had revenues of around \$4.6 billion and an EBITDA of just over \$561 million in 2023, is upbeat about prospects for the business aviation segment, believing that demand for business aviation services will continue to manufacture backlogs and MRO activity.

"We are very bullish about business aviation," says chief executive and chairman Russell Ford, who

has run Standard Aero for 11 years. "We saw during the pandemic, a shift from commercial, particularly into the fractional market. We are partners with the biggest fractional providers, and they have been flying the wings off their aircraft. Three years on [from the pandemic], demand is still at an elevated level, and we have added capacity."

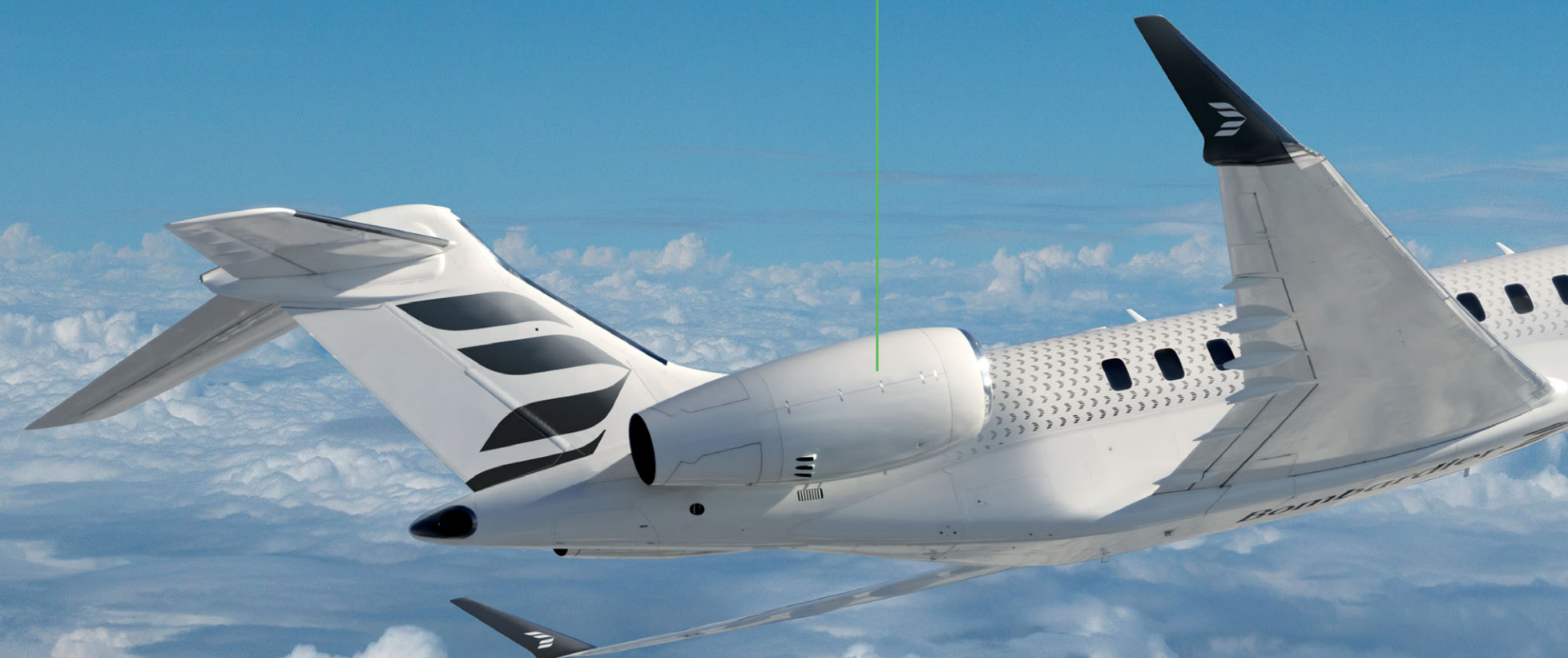
The company has been consolidating the market, acquiring more than a dozen businesses since its divestment by last-but-one owner Dubai Aerospace Enterprise to

Veritas Capital in 2015. Carlyle acquired the business five years ago. Its most recent purchase was Aero Turbine, a military MRO provider based in Stockton, California.

"Our acquisition strategy has always been disciplined," says Ford. "We don't chase everything that moves. We buy businesses that either have [intellectual property] that we don't have or give us access to a new platform, segment or major customer, and we have a robust pipeline of targets that offer one or more of these things."

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Schwab: We are expecting a pretty good ramp up through to 2026

# Business as usual

Honeywell predicts return to normality in latest demand forecast for coming decade

Jon Hemmerdinger

Honeywell expects business jet operators will need 8,500 new jets in the next 10 years, reflecting what the company calls “normalising” and “stable” demand for business aircraft following the pandemic boom.

That is according to Honeywell’s 2024 Global Business Aviation Outlook, released just ahead of the show, which predicts those 8,500 aircraft will be worth \$280 billion over the period.

The report also shows that the used aircraft market is still “cooling” – not unexpected as the sector adjusts following a massive spike in turnover several years ago.

The outlook is based on a survey of aircraft operators and on market analyses.

“Following an influx of first-time business aviation users into the industry throughout the Covid-19 pandemic, combined with record levels of flight activity, the industry has begun to return to a more-stable growth environment at new elevated levels of production and flight activity,” Honeywell says. “Purchase plans indicate that demand for new aircraft is normalising at an elevated level, significantly above pre-pandemic figures.”

The company’s 2022 and 2023 surveys also pegged 10-year demand at 8,500 business jets. But its 2019 pre-pandemic survey estimated operators would need 7,600 new business jets over the following decade.

“The business aviation industry is in a prolonged period of healthy growth,

and we don’t see that positive trend changing any time soon,” says Heath Patrick, Honeywell’s president of Americas aftermarket. “Despite a mixed macroeconomic environment and challenging geopolitical circumstances, operators are optimistic about their flight activity increasing in 2025.”

Of the 8,500 new business jets Honeywell expects will be needed over ten years, one third will be large-cabin types, which will account for two-thirds of total estimated value, says Honeywell strategic planning manager Kevin Schwab. The survey reveals that aircraft performance and cost are the top factors driving new-aircraft demand.

Despite lingering supply chain troubles and labour shortages, Schwab notes that business-jet manufacturers are increasing production rates and will continue

doing so, helping “satisfy the huge demand” for business aircraft.

“We are expecting... a pretty good ramp up,” he adds. “We do think this acceleration [will] happen through 2025 and 2026.”

The outlook predicts aircraft manufacturers will hike deliveries 12% year on year in 2025.

Aircraft makers shipped 322 business jets in the first half of this year, up 15% from 279 shipment in the same period of 2023, according to the most-recent shipment report from the General Aviation Manufacturers Association.

Operators surveyed by Honeywell expect within five years to purchase new business jets in numbers equivalent to 18% of the current fleet – in line with last year’s survey findings.

North American custom-

ers are expected to receive 66% of all business jets delivered within five years, European customers will likely take 13% and Latin American customers will take 10%, with Schwab citing “really strong flight activity” in Brazil. Asia-Pacific buyers will receive 7% of five-year deliveries, while customers in Africa and the Middle East will take 3% – down from 6% in last year’s survey, “likely due to conflicts in the region”, Honeywell says.

It expects 2025 flight activity will exceed 2024 levels and says “shared access models” to business aviation such as fractional-aircraft-ownership providers continue attracting new customers.

Honeywell says the “market for pre-owned aircraft is cooling”, after customers had been snapping up used aircraft at a record clip during the pandemic, resulting in “record low inventory levels in 2021 and 2022”.

Schwab says the number of for-sale pre-owned jets continues “steadily increasing”, and that, despite weaker demand, prices have remained fairly steady thanks partly to supply chain problems that have slowed production of new jets.

“The value of these planes are holding up pretty well,” he says of used business jets, adding that the used-jet market should return to a more-normal state within a few years as manufacturers overcome production troubles.

The survey also addressed sustainability issues. It found that 55% of operators reported using sustainable aviation fuel (SAF) and that cost and availability are top factors hindering broader use. Notably, more operators than expected reported concerns that SAF could hinder engine reliability, and expressed doubt about the actual emissions-reduction benefits of the fuel.

Schwab says those findings reveal an opportunity for industry to improve its communications about the benefits of SAF.

# Gogo go for Duncan STC

Duncan Aviation is working with Gogo Business Aviation to complete supplemental type certificates (STCs) to install the company’s new Galileo HDX broadband connectivity service on Bombardier Challenger and Textron Aviation Citation Latitude aircraft.

The Gogo Galileo HDX service, which will operate over the Eutelsat

One Web’s low-earth-orbit (LEO) satellite network, is designed to be an easy upgrade to its existing Avance connectivity system. Gogo says the HDX service, scheduled to launch later this year, will deliver “consistent performance with low variability across all routes globally”.

Duncan Aviation’s manager of engineering Shawn Carraher

says: “This collaboration for new STCs with Gogo Business Aviation is the latest in a long line of STCs we’ve developed with Gogo over the years. We’re pleased to be working with a company that has consistently provided reliable connectivity systems for our business aviation customers.”

It comes after Gogo struck a

deal to acquire Satcom Direct at the end of September. Gogo chief executive Oakleigh Thorne says: “This transaction accelerates our growth strategies of expanding our total addressable market to include the 14,000 business aircraft outside North America, and delivering solutions that meet the needs of every segment of the business aviation market.”

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## EBAA goes solo with EBACE



EBACE has been taking place in Geneva since 2001 with the exception of the pandemic years

Murdo Morrison

The European Business Aviation Association is preparing to host its first EBACE without NBAA, describing the Geneva event as “entering a new era”.

The show will take place from 20-22 May next year in its usual Palexpo location in the Swiss city.

However, beyond 2025, EBAA is promising a “more streamlined and efficient” show, adding that it has “an exciting vision for the future of EBACE that is fully

aligned to the needs of the industry in Europe”.

The Brussels-based organisation says it is “fully committed to listening and implementing changes that ensure EBACE25 reflects the wishes of exhibitors and attendees and acts as a building block for future exhibitions”.

The EBAA announced in August that it had bought the sole rights to the European event.

The annual convention in Geneva had been run by EBAA and NBAA since its first iteration in 2001.

The two trade bodies did

not disclose the financial terms of the agreement.

EBACE had been struggling since its return after the pandemic with falling attendances and major manufacturers such as Gulfstream and Bombardier pulling out.

The Swiss city – chosen originally for its visitor-friendly infrastructure, including an airport next to the convention centre, and popularity with wealthy business aircraft owners and users – had come under criticism in recent years from both exhibitors and delegates for its high costs.

Europe’s business avia-

tion sector is much smaller and less mature than that of North America, despite similar populations and size of economy.

Shorter distances between major commercial centres, the lack of a private flying tradition, less favourable tax regimes, and a business culture that often frowns on ostentatious displays of corporate wealth are all factors. The sector has also come under sustained attack in recent years from environmental activists, who broke into the static display at EBACE 2023, damaging several aircraft.

## New business aviation show for Singapore

The company behind the Singapore Airshow is launching a business aviation convention in the city next year. Experia Events says the Business Aviation Asia Forum and Expo, which will take place in the Changi Exhibition Centre from 4-6 March, the same venue as the air show, will be the region’s only international event for the sector.

Leck Chet Lam, managing director of Experia Events, says the growth of business aviation in

Asia Pacific, particularly in Southeast Asia, means there is a need for the industry to have its own dedicated show. BAAFEX, he says, will “provide a platform for industry leaders to collaborate and drive the future of general aviation and business aviation”.

Experia says exhibitors signing up so far include unnamed aircraft manufacturers as well as TAG Aviation, MedAire, Viasat, and the Bermuda Civil Aviation Authority.

The show has the support

of the Asian Business Aviation Association (AsBAA), which will hold an industry forum co-located with the show.

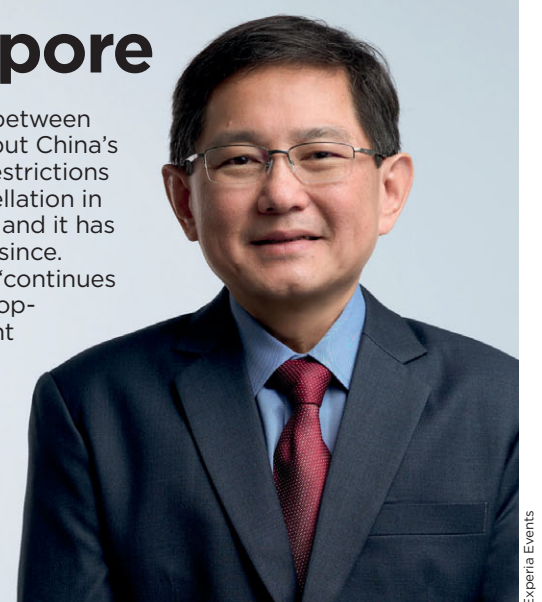
AsBAA chairwoman Jenny Lau describes the event as an “exceptional opportunity to unite our community”, adding: “It has been some time since we’ve had an event focused specifically on business and general aviation, making this occasion particularly significant.”

The show fills a gap left by the demise of ABACE, which AsBAA and NBAA co-host-

ed in Shanghai between 2012 and 2019, but China’s tight Covid-19 restrictions caused its cancellation in 2020 and 2022, and it has not taken place since.

NBAA says it “continues to consider our options for an event in Asia”.

Leck Chet Lam: Event will be a platform for collaboration



### In brief...

#### West Star expands

West Star Aviation is building a new hangar at its Grand Junction facility in Colorado. The project will add 3,700sq m (40,000sq ft) space to accommodate what the company says is “growing demand for maintenance services, avionics installations, and interior refurbishments”. It will also include offices and back shops and 2,900sq m of ramp space. “This expansion is an exciting milestone for us,” says Scott Sweeney, vice-president and general manager of the site. “This will allow us to continue to provide the top-tier service our customers expect while creating new opportunities for our employees and the community.”

#### Fast exit at Addison

FBO Million Air Dallas will open on 15 November a new ramp at Addison Airport designed to make international arrivals and clearance processes easier with a direct connection to US Customs. The 5,800sq m (62,000sq ft) development increases the FBO’s total ramp space to 34,000sq m. Jeff Zimmermann, vice-president of FBO services, says the move will “save international guests time and money, and get them on their way faster”.

#### Taking credit

The International Business Aviation Council (IBAC) has used carbon credits to offset its team’s travel to NBAA BACE and will also use the Carbon Trade Exchange’s new aviation platform ACE for future travel. Director general Kurt Edwards says the service “makes it easy for small operators to easily purchase carbon credits to offset their CO2 emissions as part of an overall sustainability plan”.



# Pearl's progress

Rolls-Royce engine for Falcon 10X moves to next phase after completing flight testing



Pearl 10X was tested on starboard wing of Rolls-Royce's Boeing 747-200 flying testbed

Dominic Perry

Rolls-Royce completed flight testing just ahead of the show of the Pearl 10X engine it is developing for the Dassault Aviation Falcon 10X business jet, after a six-month campaign.

Installed on the propulsion specialist's Boeing 747-200 testbed – contributing to the jet's unique five-engine con-

figuration – the powerplant has been in flight test since 29 March.

Since then, the programme's two flight-test assets have flown more than 25 times, covering a distance of 36,000nm (66,600km).

The final test flight took place on 26 September, a 4h 38min sortie from Rolls-Royce's facility in Tucson, Arizona.

"On behalf of Rolls-Royce,

I would like to extend my heartfelt thanks to our incredible global engineering and experimental test teams for their outstanding dedication and expertise in successfully completing the Pearl 10X flying testbed campaign," says Philipp Zeller, senior vice-president Dassault, at Rolls-Royce.

"This achievement is a testament to your commitment, innovation, and global collaboration and I am im-

mensely proud of everything we have accomplished together."

Rolls-Royce used two engines for the test campaign, swapping in the second powerplant from June.

The Pearl 10X was installed on a bespoke pylon fitted to an inboard station on the 747's starboard wing.

Rolls-Royce will ship the engines to Dassault to support the first flight of the ultra-long-range Falcon

10X next year, although it declines to provide a more precise timeframe.

"We are working in close alignment with Dassault to support their schedule," the company says.

Before delivery can take place, the first engine will need to be modified, converting it from a left- to a right-hand installation, a process requiring a change to the engine build-up and mount system, along with the nacelle.

Rolls-Royce has also yet to reveal the exact thrust rating for the Pearl 10X.

It has previously said it will be the most powerful engine in the Pearl family, topping the 18,250lb (81kN)-rated Pearl 700 for the Gulfstream G700.

Modification of the 747-200 was carried out by L3Harris in Waco, Texas, with the ferry flight to Tucson on 29 March marking the start of the flight-test campaign.

Early tests saw the Pearl 10X confirming its high-altitude performance, with the 747 flying at up to 45,000ft.

Addressing the high-altitude testing has been enabled by the 747's unusual configuration, which features three different engine types – three standard RB211s, the Pearl 10X, and a Trent 1000 TEN, previously installed as part of the widebody powerplant's own development.

Dassault Aviation is sitting out NBAA BACE this year for what is believed to be the first time, as is competitor Gulfstream. Rolls-Royce, however, is exhibiting.

## Taking action on emissions

Winglets supplier Aviation Partners is teaming with 4Air to offer an "emissions footprint assessment" to operators.

4Air offers a rating system that allows companies to track and offset their emissions.

It will provide Aviation Partners customers with "insights into their environmental footprint" by analysing data and coming up with a suggested action plan.

Aviation Partners has been offering its winglets – structures that are added to wingtips to reduce vortex, resulting in lower drag and fuel burn – since 1991.

They are fitted to more than 10,000 business and commercial aircraft.



An artist's impression of the new facility, which opens next year

# New in Napa

Canadian-based business aviation services group Skyservice this month broke ground on a new FBO and hangar at Napa County Airport, California.

The 5,600sq m (60,000sq ft) facility includes a passenger terminal with rooftop restaurant as well as a 3,700sq m hangar able to accommodate the largest Bombardier, Dassault, and Gulfstream jets.

While construction is underway, the com-

pany will continue to provide FBO services from temporary facilities. The new centre is due to open in late 2025.

Skyservice operates from more than a dozen locations in the USA and Canada, including Calgary, Montreal, Ottawa, Toronto Midfield, Toronto Pearson and Vancouver, as well as, south of the border, Bend, Fort Lauderdale, Helena, Miami, and Redmond in Oregon.

## FLIGHT DAILYNEWS

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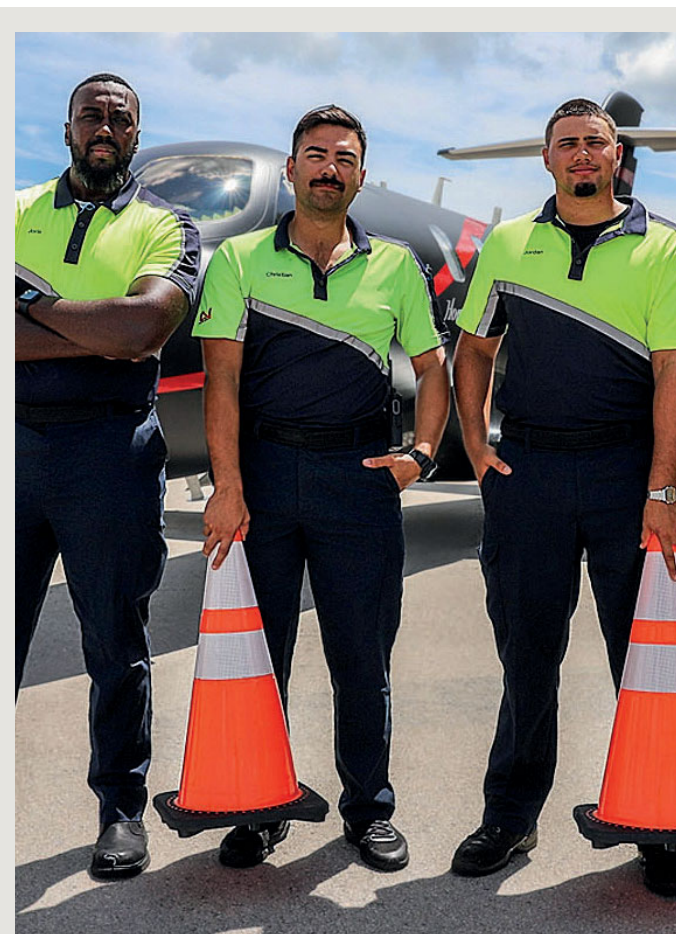
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Banyan staff with some of the products on sale through FBO Essentials

## Banyan focuses on Essentials

South Florida fixed base operator and aircraft dealer Banyan Air Service is launching at the show a service supplying airside ground equipment to fellow FBOs.

The Fort Lauderdale Executive Airport-based firm describes its FBO Essentials as a "one-stop" online shop that avoids FBOs having to source products such as ear protectors, whistles, gloves, high-vis uniforms, and marshalling wands from multiple suppliers.

The company already operates a parts distribution operation as part of its maintenance, repair and overhaul business, so FBO Essentials is an extension of that, says Banyan.

"Our goal is to help streamline daily operations, allowing FBOs to focus on what they do best," says chief operating officer Jon Tonko.

"By offering carefully curated products, we ensure that FBOs have access to the best tools to support their teams."

Banyan, which is marking its 45th birthday, is an authorized airframe and avionics repair station for many business jet types, as well as a Honda Aircraft distributor.

Earlier this year, Banyan opened its first satellite MRO, at St Augustine in Florida's northeast, which offers exclusively HondaJet maintenance and avionics support.

# BizJet adopts parent's brand

Murdo Morrison

One of the biggest names in business jet engine maintenance, repair and overhaul has rebranded, with BizJet International now Lufthansa Technik Engine Services.

The move aligns the Tulsa, Oklahoma-based outfit with the global brand of its parent, Lufthansa Technik, which in turn is owned by the German airline group.

Despite being bought by Lufthansa Technik 24 years ago, BizJet, which was founded in 1986, has until now retained its own identity. However, with Lufthansa Technik expanding its presence in the USA, the parent company de-

cided it made sense to adopt a single brand.

Michael Scheferhoff, who was managing director and head of operations Americas at Lufthansa Technik Component Services, has become the new head of the engine services unit. He succeeds Thomas Illner, who has taken up a similar role at Lufthansa Technik Component Services.

"Leveraging the strength of the Lufthansa Technik brand will help us strengthen our presence in both the corporate and commercial engine services markets," says Scheferhoff.

BizJet is best known for supporting the Rolls-Royce Tay 611 family, which powers Gulfstream G1V and G450 aircraft. In 2016, it expanded into

The former BizJet is best known for supporting the Tay 611 family of engines



Lufthansa Technik

the commercial airline sector by joining Lufthansa Technik's Mobile Engine Services network, providing testing and repair services for the Airbus A320 family's International Aero Engines V2500 and the CFM International CFM56-5B and CFM56-7B that power the Boeing 737.

## Blackhawk completes early TBM 700 STC testing

Blackhawk Aerospace has completed "baseline" flight testing for its Daher TBM 700 Series supplemental type certificate (STC) programme, describing as a "major milestone" the first flight of the single-engine turboprop powered by a higher-horsepower Pratt & Whitney Canada PT6A-66D.

The inaugural flight of the testbed aircraft - N590JL (pictured) - took place on 20 September. The new version of the engine increases equivalent shaft horsepower from 1,583hp to 1,825hp. The sortie followed a series of engine runs on 13 September.

Blackhawk says further flight tests, in collaboration with P&WC, Hartzell Propeller and MT Propeller, will "further refine performance metrics".

"This first-flight milestone represents a key advancement of our STC programme, bringing increased power, performance, and sustainability to TBM 700 owners," says Edwin Black, Blackhawk president.

The Waco, Texas-based turboprop performance enhancements specialist expects US Federal Aviation Administration approval for the STC in the second quarter of next year.



Blackhawk Aviation

# Biggin Hill aims to be runway success

A slew of runway enhancements will help Biggin Hill win business from US corporates that favour London's large commercial gateways, believes the company behind the business aviation airport.

The infrastructure improvements - part of a record £20.5 million (\$27 million) investment by Biggin Hill - include a new IRVR (instrumented runway visual range) system; 24-hour METAR

(meteorological terminal air reports) and ATIS (automatic terminal information service); and a resurfaced runway that will include the installation of centre-line lighting.

Biggin Hill, which is exhibiting at NBAA, expects the changes to be in place by the second quarter of 2025 and says they will make the airport easier to operate from in all weather conditions.

"This will put us in a po-

sition we have never been before, with all the attributes of a grown-up airport, including the same features that users will find at Heathrow or the other big airports," says Robert Walters, commercial director of Regional Airports (RAL), which has owned Biggin Hill since 1994.

"It enhances our resilience, which is really important particularly with some Fortune 500 companies who

have really strict operational requirements."

He adds: "The fact that this is the biggest investment we have ever made as a company reinforces our commitment to operators doing business in London."

The airport in the south-west London borough of Bromley markets itself on its proximity to the capital's financial district. The planned opening of a second Thames

tunnel at Silvertown in 2025 "will put us within 30 minutes' drive of Canary Wharf", says Walters.

The airport is home to more than a dozen independent businesses including a helicopter charter firm and maintenance, repair and overhaul providers, including Bombardier, which has its flagship European hangar there. Dubai's Jetex also runs a fixed-base operation at Biggin Hill.

Gogo's global dealer network developing STCs to cover virtually every business aircraft make and model



# Momentum builds for Gogo's LEO satellite internet system



Gogo installed the first Gogo Galileo HDX on this Challenger 300 (center and top of aircraft)

The STCs in development will cover virtually every size business aircraft and unlock a total addressable market of more than 18,000 aircraft globally, many of which have never had access to broadband inflight Wi-Fi prior to Gogo Galileo. That's about to change thanks to the compact size and weight of the HDX antenna.

The STCs are supported by Gogo's vast dealer network in North America, Europe and South America, and will cover a wide range of airframes from super-light jets to ultra-long-range large-cabin aircraft, all to be completed in 2025.

The airframes include:

- Airbus Corporate Jet
- Bombardier Challenger 300 series
- Bombardier Challenger 600 series
- Bombardier Global Express series
- Embraer Legacy 450/500
- Embraer Legacy 600/650
- Embraer Phenom 100
- Embraer Phenom 300
- Embraer Praetor 500/600
- Gulfstream G-200
- Gulfstream G-280
- Gulfstream G-IV/G-IV-X/G-450
- Gulfstream G-V/G-550
- HondaJet
- King Air series
- Learjet 40/45/70/75
- Pilatus PC-12
- Pilatus PC-24
- Textron Citation Jet 525 series
- Textron Citation Latitude
- Textron Citation X/X+
- Textron Citation XL/XLS
- Beechcraft Hawker series



Germany-based Atlas Air Services AG is getting the first EASA STC on this Cessna Citation CJ1+

Gogo anticipates the STC portfolio will continue to grow in the coming weeks, and the company is in discussions with all of the business aviation aircraft manufacturers for aftermarket STCs and service bulletins.

"The exceptional response from our dealer network is a testament to the strong demand for Gogo Galileo in the industry," said Sergio Aguirre, president and chief operating officer for Gogo. "Finally, operators around the world now have access to true aviation-grade broadband connectivity regardless of the size of aircraft they operate or where they fly."

The HDX is a fuselage-mounted, electronically steered antenna (ESA), designed with a small form factor to fit on any size business aircraft.

But don't let its size fool you - this system will perform, delivering peak speeds up to 60 Mbps, and mean speeds very close to peak at 57 Mbps.

"Gogo Galileo HDX stands to revolutionize business aviation inflight connectivity by delivering a fast, low-latency Wi-Fi experience to aircraft of all sizes, especially small jets," said Aguirre. "I'm pleased to say we remain on track to deliver this game-changing technology late this year."

Gogo Galileo is backed by Eutelsat OneWeb's enterprise-grade Low-Earth-Orbit (LEO) network. Designed for mobility, the network will deliver low variability and consistent performance across all routes globally.

"The Eutelsat OneWeb LEO constellation is fully deployed, and we are finalizing the ground infrastructure to deliver seamless, low latency and high-performance broadband connectivity to business jets no matter where they fly," said Jason Sperry, head of business aviation for Eutelsat OneWeb.

Gogo Galileo is an easy upgrade to any AVANCE system (AVANCE L3, L5, LX5, SCS), requiring power in and ethernet out, for a simplified installation and minimal disruption to the aircraft. Gogo has been flight testing the system and network since early September making adjustments to ensure maximum performance once it launches commercially.

Gogo is accepting purchase orders for the HDX and is offering a special promotional rebate of \$25,000, available for a limited time, to current Gogo customers with a legacy air-to-ground system (ATG 1000, 2000, 4000, 5000) who upgrade to an AVANCE SCS with the HDX. ▶



Inflight connectivity's next revolution has arrived



# Reimagining inflight Wi-Fi

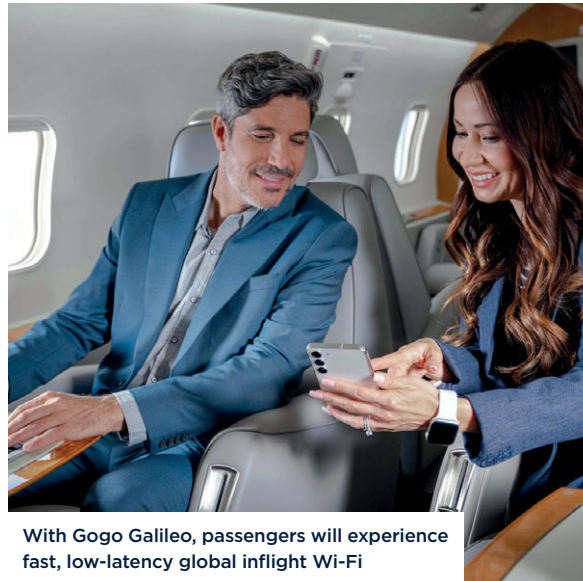
Technology moves fast and that's especially true with today's inflight Wi-Fi systems. New broadband Low Earth Orbit (LEO) satellite networks are ushering in a new era of inflight connectivity that will forever change the connectivity experience for business aviation operators on a global scale.

With new LEO networks in place, business aviation aircraft owners and passengers no longer have to worry about the availability, performance, cost or geographic coverage of the network. And LEO enables new antenna technology that is smaller, lighter, and more affordable to operate than ever before.

Gogo Galileo is the new LEO service from Gogo Business Aviation, and it will deliver fast, low-latency broadband Wi-Fi to aircraft of any size worldwide, something no other provider is offering today.

"With Gogo Galileo, we imagined a world where our system could fit on any size aircraft with four times the performance of any other previous systems that were operating in aviation, and at a quarter of the cost," said Sergio Aguirre, Gogo's president and COO. "Gogo Galileo HDX is the deliverable of reimagining what inflight Wi-Fi should and can be for all business aviation operators worldwide."

Gogo completed installation of the HDX antenna, its most compact antenna, on a Challenger 300 in August and has been flight testing the system



With Gogo Galileo, passengers will experience fast, low-latency global inflight Wi-Fi



Gogo Galileo will utilize the Eutelsat OneWeb LEO constellation

during the past several weeks.

"The system has been performing well during our recent flights and everything is progressing as we expected, which is great news for the industry, because operators are hungry for an aviation-grade LEO system," Aguirre added.

When choosing an inflight connectivity solution

and provider, Aguirre says there's more to consider than fast connectivity.

"When you're making the kind of investment to add inflight connectivity to your aircraft, you can't afford to make the wrong choice. You need to ask: Is the company committed to business aviation for the long term? Is there a foundation of trust and

reliability? And what kind of customer support will you get?" said Aguirre. "Gogo does one thing - inflight connectivity for business aviation, and we do it very well. Your inflight connectivity is our only concern."

A few aspects of Gogo's business are unique, helping it stand out from the rest of the LEO crowd:

- Built by business aviation, for business aviation: Gogo serves business aviation, which means Gogo understands the unique needs of business aviation and builds its systems to withstand the rigors of aircraft operation.
- World-class customer support: Gogo provides white-glove and dedicated customer support from a team of experts in business aviation connectivity who are available 24/7/365.
- AVANCE: If you already have a Gogo AVANCE system (SCS, L3 or L5) installed in your aircraft, the cost and downtime to upgrade to Gogo Galileo is significantly less compared with adding a non-Gogo system and starting from scratch. AVANCE also helps future-proof your investment because AVANCE was designed so you can easily add satellite with air to ground for redundancy and increased bandwidth, as well as any future networks and technological advancements.
- Gogo Vision: The industry's only inflight entertainment service offering hundreds of movies and TV programs, a premium 3D moving map, 30 leading magazines titles in digital format, and business news.
- Over-the-air software updates: Keep all Gogo AVANCE LRUs updated and with the latest technology, for one aircraft or an entire fleet, from anywhere in the world, with no down time required.
- Cybersecurity: Gogo prioritizes the security of its inflight connectivity services, implementing robust measures to safeguard data. With Gogo, security is built into every system. ■



## Gogo Galileo tour launches nationwide

State-of-the-art mobile demo room coming to a city near you

Gogo Business Aviation is launching a nationwide Gogo Galileo tour here in Las Vegas at the static display AD\_325, bringing an interactive Gogo Galileo experience to business aviation professionals that will be traveling across the United States from now through early March.

The state-of-the-art mobile demo room was designed to give customers and business aviation professionals from across the industry the ability to experience Gogo Galileo, the company's Low-Earth-Orbit (LEO) satellite broadband solution built for any size business aircraft flying globally.

"For anyone curious what reimagined inflight Wi-Fi feels like, we invite you to come experience Gogo Galileo firsthand at one of our tour destinations," said Sergio Aguirre, president and COO for Gogo. "We'll show you what inflight Wi-Fi as fast or faster than your home or office is like and why Gogo Galileo is the right choice for you."

At each of the 32 tour stops, participants can test Gogo's high-speed, low-latency inflight connectivity solution via both the HDX and FDX antenna configurations - the more compact HDX, built to fit any size business aircraft from super-light jets and turboprops to larger aircraft, and the larger FDX which delivers best-in-class performance for large-cabin jets.

Anyone attending will be given the opportunity to trial both configurations using their own devices to experience online activities such as video conferencing, live TV, streaming video, and more, just as they would if they were flying at 40,000 feet.

Following NBAA-BACE, the Gogo Galileo tour will be traveling across the country with stops scheduled at FBOs and regional airports.

For the list of tour cities and locations and to RSVP for an in-person demonstration visit [gogoair.com/galileo-on-tour](http://gogoair.com/galileo-on-tour). ■



Gogo's staff of dedicated customer support professionals monitor every flight

## Gogo to acquire Satcom Direct

Gogo and Satcom Direct (SD) recently announced entry into a definitive agreement under which Gogo will acquire Satcom Direct to create the only inflight connectivity provider able to satisfy the performance and cost needs of every segment of the global business aviation (BA) and military/government mobility markets. "This transaction accelerates our growth strategies of expanding our total addressable market to include the 14,000 business aircraft outside North America and to deliver solutions that meet the needs of every segment of the BA market," said Oakleigh Thorne, Gogo's chairman and CEO. "Together, Gogo and Satcom Direct will offer integrated GEO-LEO satellite solutions that will provide the highest performance of any satellite solution, along with world-class customer support."

### Strategic Synergistic Benefits

Gogo is a leading provider of broadband connectivity services for the business aviation market with products and services on thousands of business aircraft of all sizes and mission types from turboprops to the largest global jets. Gogo operates an air-to-ground network in North America and is launching a fast new global satellite service, Gogo Galileo, that will utilize a

Low Earth Orbit (LEO) constellation.

SD is the leading global BA geostationary (GEO) satellite inflight connectivity service provider with an extensive international sales and service footprint.

The move establishes a unique LEO-GEO-ATG product line for business aviation with unmatched offerings for all segments of the market. From air-to-ground (ATG) to meet connectivity needs in North America, to integrated multi-orbit LEO-GEO global solutions via the combination of Gogo Galileo and SD's Plane Simple GEO solutions.

It also combines two respected business aviation-focused companies and with a global sales force and white-glove customer support teams to serve Gogo and SD customers worldwide.

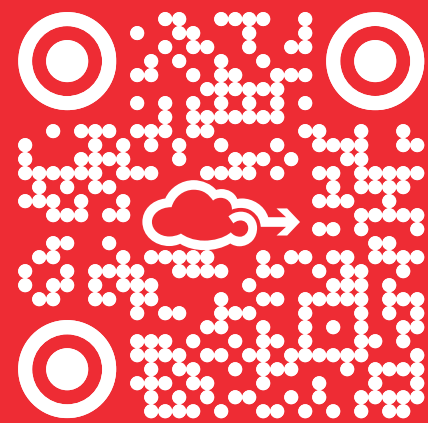
"Satcom Direct is thrilled to be joining forces with Gogo, a company that shares our focus on delivering outstanding service and leading innovation," said Chris Moore, Satcom Direct's president. "Our businesses have highly complementary core competencies, and our combined financial strength and expertise unlocks opportunities to invest in new technology and deliver significant long-term value creation."

The acquisition is expected to close by the end of 2024.

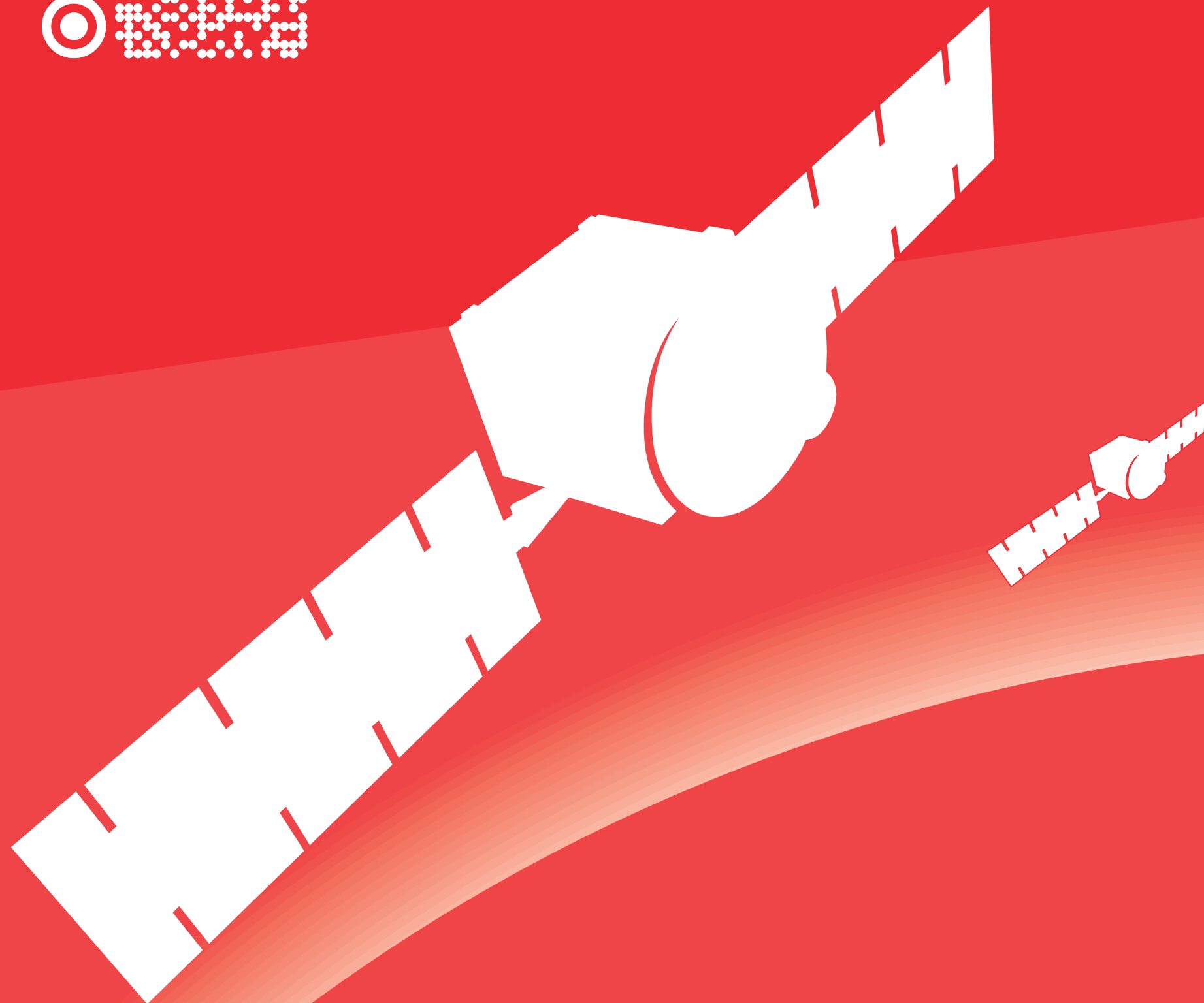


# GOGO GALILEO ON TOUR

Experience high-speed LEO satellite connectivity onboard our state-of-the-art mobile demo room at **static display AD\_325** - the first stop on our national tour.



Can't make it to static?  
Meet us on the road.



Futurologist and astrophysicist Neil deGrasse Tyson is one of the attractions of a packed keynote and discussion programme taking place over the next two days

Murdo Morrison

If you are feeling gloomy about the state of the world and want to be inspired about the prospects of tomorrow, then the keynote session – taking place this morning from 8.30am to 9.45am – is the place to be. Star of the programme is astrophysicist, author, futurist, and media personality Neil deGrasse Tyson, making his return to NBAA BACE. His talk promises to “fire the imagination about the boundless opportunities ahead”.

Tyson's address takes place amid a cross-country speaking tour that includes sell-out dates. After rising to prominence in the mid-1990s through his submissions to dozens of scientific publications, he became director of the Hayden Planetarium in New York, a position he still holds. He was also host of the four-part PBS NOVA mini-series “Origins”, based on his book *Origins: Fourteen Billion Years of Cosmic Evolution*, co-authored by Donald Goldsmith. His latest book, *Starry Messenger: Cosmic Perspectives on Civilization*, links the history of human progress to the importance of scientific exploration and discovery in understanding humanity's place in the universe.

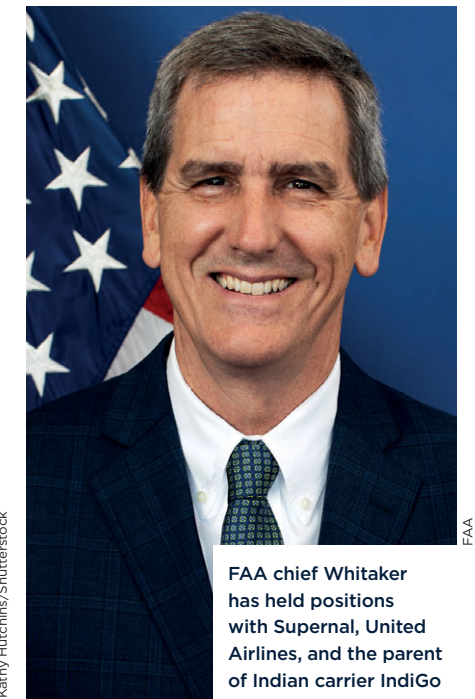
Tyson graduated from the Bronx High School of Science and went on to earn his bachelor's degree in physics from Harvard University and his PhD in astrophysics from Columbia University. He is the recipient of 23 honorary doctorates and the NASA Distinguished Public Service Medal, the agency's highest award for a non-government citizen.

Joining him on stage is Federal Aviation Administration administrator Michael Whitaker, who has held the role since October last year. After serving as deputy administrator from 2013-2016, he returned to the FAA after serving as chief operating officer of advanced air mobility developer Supernal. A

## Thinking about tomorrow today



Tyson's latest book links the history of human progress to the importance of scientific exploration



FAA chief Whitaker has held positions with Supernal, United Airlines, and the parent of Indian carrier IndiGo

private pilot, Whitaker has also held senior positions with United Airlines and InterGlobe Enterprises, the holding company for Indian airline IndiGo.

Laurent and Pierre Beaudoin, the father and son who separately led Bombardier through pivotal stages of its history, will also be recognised for their achievements by NBAA during the session (see P36).

New to the show this year is the

Flight Deck Theater, which is at the W4 entrance to the West Hall, next to the Emerging Tech pavilion. It will host a series of panel discussions today and tomorrow, featuring chief executives, government officials, and other high profile industry figures.

According to NBAA president and chief executive Ed Bolen, the Flight Deck will “put a spotlight on the intersection of leadership, technology, and the operating environment”, with sessions “designed to inform, inspire, and engage through idea sharing among panelists and the audience”.

Discussion themes range from artificial intelligence to flight security, and sustainability to market prospects.

At 10.30am today, there is a chance to hear from aviation's AI pioneers about how the technology can lower costs while making the sector even more flexible, responsive and safe. Speakers include Yemaya Bordain from Daedalean, a designer of AI-powered flight control and navigation systems, and Robert Rose, co-founder of Reliable Robotics.

At 2pm, some of the industry's leading brokers have their say in a session entitled: “An insider's look at today's market”. The panel includes Don Dwyer of Guardian

Jet, Jet Avia's Emily Deaton, and Steve Varsano of The Jet Business. Industry analyst Rolland Vincent is moderator.

Closing the day, at 4pm, you have an opportunity to ask questions of top officials from the FAA and Transportation Security Administration in a “Meet the regulators” session.

Tomorrow kicks off with an hour on “Flight security: protecting bizav passengers and crew in a flight-tracking age” at 9.30am. Expect this session to deal with the thorny debate between the right of social media warriors to trace and publish every movement of a rock star's or business magnate's private jet, and the obvious risks to safety and privacy that represents. Hacking and cyber espionage are other dangers presented by the digital world. Hear from experts such as FlightAware's Daniel Baker, Dassault's Jean Rosanvallon, and Tyson Weihs of ForeFlight on how technology can also protect crews and passengers.

On Wednesday afternoon, there are sessions on the industry's progress towards net zero (at 2pm), and its economic prospects in these turbulent times, as the “sharpest business aviation analysts parse the market trends and debate what will happen next”. It begins at 4pm. ▶



Steve Varsano of The Jet Business is taking part in a meet-the-brokers session in the Flight Deck Theater



Business aviation enjoyed a post-pandemic spike in the USA – but what are the longer-term prospects for the sector ahead of its biggest annual event, and a presidential election two weeks later?



The benefits of business aviation as a time-saving tool will endure, believes Jetcraft's Chad Anderson

# Normal service

**Murdo Morrison**

The record of the Biden-Harris administration in tackling inflation, creating jobs, and generally getting the US economy back on track after the pandemic and the surge in prices that followed Russia's 2022 invasion of Ukraine is being fiercely debated ahead of the presidential election.

While the political argument tends to revolve around how "ordinary" voters feel about their standard of living, it is the confidence of corporate America and those who can afford to fly privately for work or leisure that determines the wellbeing of the business aviation sector in the USA, still the biggest in the world by far. There is an inevitable nervousness among that demographic ahead of 5 November.

With lack of clarity around the path of interest rates, taxation, and the wider economy, the election "adds to that uncertainty and can be an excuse for people to delay spending decisions", maintains Adam Cowburn, managing director at Alton Aviation Consultancy.

Chad Anderson, chief executive of

brokerage and aircraft trading firm Jetcraft, agrees elections can "create a little bit of pause" as purchasers put acquisitions on hold until policy directions become clearer.

Clues to the mood of the industry are likely to emerge this week at the industry's biggest annual gathering, NBAA BACE, just two weeks from

when voters will choose between Kamala Harris and Donald Trump as their next Commander in Chief.

Judging by the latest data and anecdotal evidence, the North American market appears in reasonable shape, despite the collapse of a post-Covid mini boom. Flying hours in the first half of the year were down from 2022 and 2023, but the decline seems to be slowing, and totals are still ahead of the average for the previous decade. Fractional ownership particularly remains in growth mode, bucking the trend in the rest of the market.

With several new variants now in production, manufacturers are shipping more aircraft, with worldwide deliveries of 322 business jets in the first half of the year representing an almost 9% increase over the same period in 2023, and offsetting a 3.4%

# 9.6%

Percentage Argus International forecasts flight activity in North America this year to be ahead of 2019

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AIR FORCE



decline in turboprops, according to newly published figures from the General Aviation Manufacturers Association (GAMA). This is despite ongoing challenges with supply chains.

During the first half of 2024, almost all the major airframers – including Bombardier, Embraer, Gulfstream, and Dassault Aviation – increased their shipments compared with January-June the previous year. Gulfstream saw its deliveries rise from 45 to 61, and Bombardier from 51 to 59. Among the top six, only Textron Aviation's numbers fell, although Citation-family registrations were near static at 78.

And the pool of used aircraft for sale – a key indicator because in a booming market anything with a price sticker tends to get snapped up – remains in single figures. Inventory levels in the second quarter were 7.7% of the total fleet, according to Global Jet Capital (GJC), higher than the low water mark of 2022, but down on the previous decade's average of around 10%. This, says GJC, indicates the market's return to "its historic level of liquidity".

### 'Sticky' demand

The 2022 surge in private aviation – especially in North America but also in Europe and elsewhere – was largely attributed to wealthy retirees and entrepreneurs who were desperate to resume travelling for business and pleasure once Covid-19 restrictions were lifted, but were frustrated by airline dysfunctionality and worried about the health risks of flying commercial. A big question as the pandemic receded was how

"sticky" demand from these first-time users would be.

According to independent broker Michael Mikolay of Mikolay Jet Group, far from all these debutants have returned to the airlines. "Covid brought a bunch of new players to business aviation, and many have stayed", including some who purchased their first aircraft during the period, he says. "Plenty of people have told me they are just not going back on commercial."

Cowburn says that although the market has declined as many of those new or occasional users regain trust in commercial flying,

departures will "settle down" to 15-20% ahead of pre-Covid activity, down from a 2022 peak of around 30%. "I think we'll end up with a higher base, a new normal," he says.

Argus International's TRAQpac aircraft tracking data records a 2.7% year-on-year decline in flight activity in North America for the first two quarters, but this compares with a 3.7% drop in the same period in 2023. Overall traffic for the period remained almost 8% ahead of 2019, with a "very strong" fractional market partly compensating for declines in the Part 135 (charter) and Part 91

(private non-charter) segments.

"As we move through the second half of 2024, we expect the industry to remain mostly the same, with a slight improvement over H1. We remain in an environment that is stable but posting consistent slight declines," says Argus International in its commentary. It expects 2024 to finish 1.9% down from 2023, 5.1% below 2022, but 9.6% above 2019.

### Well positioned

In its report on the first six months, GJC says "the business jet market continued to normalise following record high utilisation and demand in the post Covid-19 period", and that "as things stand, the industry is well positioned to weather any future economic downturn".

There are two reasons the fractional sector is doing so well, suggests Cowburn. The "low end" of ad hoc charter has been hit by new business aviation users returning to airlines. Meanwhile, the rise of aircraft-tracking software and activists exposing on social media the environmental "hypocrisy" of private aircraft users such as singer Taylor Swift has increased the sensitivity around whole-aircraft ownership. Fractional ownership affords some anonymity, he says.

Fractional ownership also represents good value so long as travellers are using it properly, according to Mikolay. "If you are flying less than 100 hours a year, charter makes most sense," he says. "Above 250 or 300 hours and fractional gets expensive and you probably want to look at owning your own aircraft. But anything in



Uncertainty over the outcome of 5 November vote could cause some to delay their buying decisions



Gulfstream has stopped exhibiting at the NBAA convention



between, fractional is usually your best option."

Business jet buyers are also getting better at "right-sizing", says Jetcraft's Anderson, whose company sources aircraft on behalf of clients. "If your mission requires a [Gulfstream] G280, you don't need a G650," he says. Allied to this is a desire by firms to be seen to be reducing their carbon footprint. As well as not operating larger aircraft than needed, corporates are also seeking sustainable aviation fuel where available. "Everyone is being attentive to the green mission," he says.

#### Controversial commute

Despite high-profile stories in the press such as Starbucks coming under fire for its contract with new boss Brian Niccol that allows him to use the company's jet to commute from his home in Newport Beach, California to the coffee chain's headquarters in Seattle, Washington, the US business aviation sector is less exposed than its European counterpart to an environmental backlash.

There have been few instances such as the one at European business aviation convention EBACE in 2023 that saw anti-oil campaigners break through a security fence and chain themselves to exhibitors' aircraft. However, climate sensitivity in the USA is increasing, believes Cowburn. "I wouldn't expect physical activism to reach European levels, but it is an increasing part of the conversation," he says.

Snagged supply chains and skills shortages also threaten to put a brake on industry growth, according to GAMA. "Impressive backlogs and plans for facility expansion by many of our OEMs"



Manufacturers face supply chain challenges and slow decision making by regulators, says GAMA

have been tempered by "ongoing supply chain and workforce recapitalisation issues... routinely compounded by unacceptable turn times in terms of responsiveness and lack of decision making" by the US Federal Aviation Administration, says president and chief executive Pete Bunce.

"Our industry is the incubator of safety enhancing and aviation sustainability technology, which in turn serves as a catalyst for economic growth and exemplary employment for millions around the globe," he adds. "It is vital that our regulators continue to improve effectiveness and efficiency of certification and validation processes."

A further worry is the financial fragility of some prominent players, including Wheels Up, the largely Beechcraft King Air operator that was purchased by Delta Air Lines

and a consortium of investors in 2023 after racking up losses in the hundreds of millions of dollars over several years. It is seen as particularly vulnerable to the drop in discretionary missions – or as analyst Brian Foley describes it: "Private flyers reconsidering the value of their \$20,000 New York to Palm Beach flight."

#### Structural changes

Commenting on the company's second quarter results, which show a stemming of losses although not enough to push it into profit, new chief executive George Mattson said the company was making "great strides towards the structural changes that are necessary to build a sustainable business model", including establishing closer ties with Delta's airline passengers through loyalty programmes. One barometer of industry

confidence is its support for major trade shows. The NBAA convention – now in Las Vegas each year after a spell of alternating with Orlando, Florida – has been an annual pilgrimage for tens of thousands of business aviation professionals for decades and remains for many a must-attend. However, some believe cracks have begun to show. Gulfstream has stopped exhibiting at the event, and this year, for the first time, Dassault will be absent.

Meanwhile, EBACE was launched as a joint venture between the Brussels-based European Business Aviation Association (EBAA) and the NBAA in 2001 and has been staged every year since (except the Covid-affected 2020 and 2021). However, its final show in its current guise took place in Geneva in May. In August, both associations announced EBACE would continue to be run by the EBAA on its own, inevitably as a smaller-scale event.

Despite all the challenges facing the industry, many remain confident about its long-term prospects. Anderson sees signs that the industry's post-Covid hangover in 2023 is already fading, with activity in the third quarter ahead of the previous two quarters, despite concern around the presidential election. For him, the benefits of business aviation as a time-saving tool will continue to appeal because commercial aviation simply cannot be relied upon.

"Our best sales team is the airlines, as their performance is never really going to improve," he says. "Add to that the ramp appeal of a business jet, and the many examples we can point to of increased productivity and security, and you have a compelling case for using business aviation." ■



Post-Covid chaos at airports pushed many first-timers into private aviation



# Cancer Patients Fly Free

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–Jeff McClean, Vice President  
Global Flight Operations, Procter & Gamble



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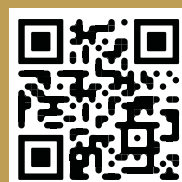
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Focus Programmes

Most business aircraft manufacturers have revealed their hands in terms of new product development ahead of this year's NBAA convention. But will there be any surprise launches? It's not out of the question

## The next big thing



The G800 is Gulfstream's next aircraft in line for certification

**Murdo Morrison**

The odds on an all-new business jet being announced any time soon are high.

After a flurry of launches in 2021 and 2022 – during which Bombardier, Dassault Aviation, and Gulfstream seemed to be going all out to trump their rivals' top offerings in terms of range and cabin size and comfort – the focus has switched to certification and delivery, with the big three manufacturers concentrating on bringing their latest types into service.

Bombardier chief executive Eric Martel summed up the competitive situation in March when he said the airframers had “played their cards in terms of what products they will be offering” over the next few years, and that only “a new technology gamechanger” would convince him to go to his board and plead

the case for funding a clean-sheet programme this side of 2030. His industry counterparts probably agree.

### Global ambitions

Bombardier intends for its 8,000nm (14,800km)-range Global 8000 – which will supplant the Global 7500 as the airframer's flagship – to be in the hands of its first customer next year.

Dassault is battling supply chain pressures to have its Falcon 10X – capable of flying 7,500nm – in

operation by 2027, having pushed back its previous late-2025 target. Meanwhile, Gulfstream – which has also just flown its smaller, 4,200nm-range G400 – is close to certification for its 8,000nm-range G800.

As far as the other manufacturers are concerned, the only all-new business aircraft platforms known to be in gestation are the Honda Aircraft Echelon – a light jet first revealed as a concept in 2021 and which the Japanese-owned manufacturer hopes to have in

service by 2028 – and Textron Aviation's Beechcraft Denali, a long-delayed single-engined turboprop.

As NBAA BACE kicks off this week, there is the usual speculation around Bombardier doing something to refresh or replace its enduring and successful Challenger family. There are also questions over whether Embraer or Textron might fancy another audacious adventure into a new segment. However, an all-new platform from any of them appears unlikely in the immediate term.

The large-cabin Challenger 650 – though it has gone through multiple iterations – has its roots in the 1980s. Its super-midsize Challenger 3500 sibling dates from the early years of this century, although it too has been updated. Additional upgrades are probably all Bombardier customers can expect. In May, Martel ruled out a clean-sheet aircraft from the Canadian airframer this decade, noting that “what I see

Dassault is battling supply chain pressures to have its Falcon 10X – capable of flying 7,500nm – in operation by 2027, having pushed back its previous late-2025 target





Dassault expects the Falcon 10X to make its maiden sortie next year

between now and 2030 will be... derivatives".

Embraer's last clean-sheet launches were the original Legacy 450 and Legacy 500, which morphed into the Praetor 500/600. Chief executive Francisco Gomes Neto did speculate earlier this year that the Brazilian manufacturer might be ready to begin developing a new aircraft in the next two years. However, he did not elaborate on whether this might be a business jet or a commercial programme.

Embraer has persistently floated the idea of launching a business jet larger than its super-midsize Praetor 600. It is not a far-fetched prospect; the manufacturer has plenty of experience of developing large aircraft, including the C-390 airlifter, powered by twin International Aero Engines V2500s. In addition, its first foray into the sector was with the Legacy 600/650 and Lineage 1000, business jets derived from its successful regional jet families.

Whether the Brazilian company, which broke into the business aviation market in the early 2000s, has the appetite to risk billions of investment dollars to tussle in a large-cabin segment dominated by Bombardier, Dassault and Gulfstream remains another matter.

#### Light refreshment

In the meantime, the manufacturer has in recent years refreshed its Phenom 100 light jet and Phenom 300 superlight, the best-selling type in its segment for more than a decade. In 2023, Embraer announced the Phenom 100EX, with a revamped interior. Deliveries began this year.

Textron Aviation, which has more business aviation types than any

other manufacturer under its Cessna Citation and Beechcraft brands, did launch into the large-cabin segment in 2015 with the Citation Hemisphere, its largest aircraft to date. However, it abandoned the programme three years later over problems with the Safran Silvercrest engine.

Powerplant troubles have also stalled the arrival of the Denali, with the Wichita-based airframer disclosing last year that the turboprop – the first real direct competitor to the top-selling Pilatus PC-12 – would likely not receive certification until 2025. Slower-than-anticipated approval of the GE Aerospace Catalyst – designed and built by the US company's Italian and Czech subsidiaries – remains the stumbling block.

Despite Martel's assertion that both his main rivals have "played

their cards", Gulfstream retains the power to surprise. Several of its launches have only been revealed when the programme is already well down its development path; some have even flown. However, with new-ish types in almost every segment it competes in – other than the Israel Aerospace Industries-built super-midsize G280 – it is hard to see which gap the Savannah-based manufacturer might feel the need to fill.

Gulfstream in August completed the first flight of its G400, which it launched alongside the G800 in 2021. The Pratt & Whitney Canada PW812A-powered jet, which is derived from the G500/600 airframe and has a similar engine, gives customers a slightly smaller and lower-priced entry option in the large-cabin segment. Gulfstream is aiming for a 2025

entry into service.

The 19-passenger G800 is coming close to the end of its three-aircraft flight test campaign, just as Gulfstream steps up deliveries of its G700 sibling. The latter entered service earlier this year with Qatar Executive, although certification had been delayed by more than a year largely attributed to staff shortages at a US Federal Aviation Administration caught up with monitoring the travails at Boeing. Both types are powered by the Rolls-Royce Pearl 700.

Dassault is blaming delays in progress with its 10X flagship not on regulators but suppliers struggling to get engineering departments and production back up to speed following the pandemic. In May, chief executive Eric Trappier said he was confident about a revised timeline for the ultra-long-range type, which would see the 10X in service in three years' time.

The French manufacturer was also forced to reschedule 10X certification because of supply chain snags that delayed the smaller Falcon 6X, which eventually entered service last year. With production of major structures and flight trials of its Rolls-Royce Pearl 10X engine underway, the 10X's maiden sortie is now likely next year, finally giving the family firm a competitive offer in the ultra-long-range segment.

With the race to zero-carbon aviation high on the agenda, several manufacturers are working on longer-term technology demonstrators. Bombardier has flown a scaled version of its EcoJet blended-wing-body concept, but Martel has said that the research programme is unlikely to morph



Daher hopes to have a hybrid TBM on the market within three years

Daher



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Sales of the ACJ TwoTwenty have so far been modest

into an actual aircraft development this decade. Instead, any findings from the study are likely to influence the company's product strategy into the 2030s.

Other than Embraer, which majority owns the arms-length Eve electric vertical take-off and landing venture, France's Daher – owner of the TBM and Kodiak brands – has arguably been the most progressive of the mainstream manufacturers when it comes to championing advanced air mobility concepts.

#### Pulse racing

Late last year it flew its EcoPulse demonstrator, a TBM 940 powered by six Safran electric motors and an Airbus high-voltage battery, supplemented by its conventional P&WC PT6 engine. Chief executive Didier Kayat is targeting 2027 to have a certificated hybrid version of the turboprop on the market, an ambitious timescale given the regulatory scrutiny that these new-generation power generation systems will be under.

The Honda Aircraft Echelon remains the only acknowledged clean-sheet business jet in early-stage development. Alongside Embraer, Cirrus Aircraft and Pilatus, the airframer is the only other successful new entrant to the business jet market since the 1990s.

The 2,600nm-range Echelon will supersede the smaller 1,550nm-range HA-420 HondaJet light jet, which entered service in 2015, 12 years after its maiden flight. The new aircraft was officially named at last year's NBAA convention.

Aside from the Denali, Textron's latest offering in the business aircraft arena is the P&WC PW454D-powered Citation Ascend, an updated version of its 12-passenger Excel, announced in May 2023 and with certification pegged for next year. Also due to enter service in

2025 are a pair of updated light jets, the CJ3 Gen2 light jet, and the M2 Gen2. Both are powered by versions of the Williams International FJ44.

Ten years after revealing its first business jet, the PC-24, at the EBACE European business aviation convention in Geneva, Switzerland's Pilatus in 2023 announced its first major revision, with improvements to payload, range and passenger cabin. Range with six passengers is now 2,000nm. Its last major product enhancement was in 2019, with the PC-12 NGX, the third generation of the single-engine turboprop, deliveries of which began in early 2020.

#### Smaller appetite

There seems to be little appetite from the industry to offer anything smaller than the entry-level segment, currently occupied by the Citation M2 and the Phenom 100, with the single-engined

Cirrus SF50 Vision Jet the only in-production survivor of the very light jet/personal jet phenomenon of two decades ago that saw at least half a dozen new platforms unveiled.

A year ago, Cirrus released a special edition of the Vision Jet to mark 500 deliveries of the Collier Trophy-winning design, which is powered by a single Williams FJ33 engine. However, another clean-sheet launch from the Chinese-owned manufacturer, which also offers the all-composite SR22 piston, is not likely in the medium term.

Piper Aircraft, one of the companies that dabbled in very light jets 15 or so years ago, remains an important player at the lower end of the business aircraft market, alongside the pilot training and owner-flyer segments. It unveiled in February this year the M700 Fury, its fastest aircraft yet. The PT6A-powered six-seater offers a

maximum cruise speed of more than 300kt (555km/h), with a range of 1,150nm.

Daher is considering adding manufacturing capacity to support demand for the TBM 960, the latest version of its pacy single-engine turboprop, with a new facility next to an aerostructures plant the French company bought from Triumph in 2022 in Stewart, Florida. Daher currently assembles the TBM line in Tarbes, France, and its Kodiak family of utility aircraft in Sandpoint, Idaho, but says that its projected 2024 deliveries of more than 80 aircraft will take it close to its production limit.

Finally, Italy's Tecnam continues to push to the business aviation market the nine-seat P2012 Traveller – a piston twin whose main appeal is to specialist airlines and tour operators. Its case may be helped by the certification last year of a short take-off and landing variant, for which Caribbean VIP operator St Barth Executive is the launch customer.

At the other end of the business aircraft spectrum, Airbus still has high hopes for the corporate version of its A220-100 airliner in a segment dominated by Bombardier, Dassault and Gulfstream. While the ACJ TwoTwenty's range of 5,650nm may be less than that of its ultra-long-range rivals, the derivative makes up for that in cabin dimensions, according to the European manufacturer.

Sales of what Airbus dubs its "extra-large bizjet" have been modest, with around eight orders since its launch in 2020. However, the programme is still relatively young, with Swiss business aviation services specialist Comlux – which has an exclusive agreement with Airbus to outfit the first 17 aircraft – having delivered two completed examples so far. ▶



Honda Aircraft's Echelon is slated to eventually replace its HA-420 light jet

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Two generations of Beaudoins have led Bombardier for most of six decades. Laurent transformed it into an industrial giant; son Pierre oversaw its boldest gamble that necessitated a dramatic survival strategy. Both will be honoured today for their contribution to aviation



#### Murdo Morrison

Few companies in the industry have had such a bell-shaped and eventful history as Bombardier, headed by two generations of the Beaudoin family for more than three-quarters of the past 60 years. Laurent Beaudoin – who became president in 1966, five years after marrying Claire Bombardier, daughter of the company's founder – led it on a transformation journey from a privately-owned maker of snowmobiles to one of the biggest names in rail and aerospace by the time he stepped down as chief executive in 2003.

His son, Pierre, chief executive and then executive chairman between 2008 and 2017, oversaw what was arguably the Canadian manufacturer's most ambitious and riskiest product launch, the CSeries regional airliner. However, the debts Bombardier ran up by taking on Airbus and Boeing in their own backyard led to a cascade of divestments that has seen the company consolidate once more, this time to a pure-play, and significantly profitable, business jet manufacturer. During the show's opening

keynote session this morning, Laurent, 86, and Pierre, 62 – who remains non-executive chair of the Montreal-based company's board – will become the latest recipients of the NBAA's Meritorious Service to Aviation Award for their “visionary leadership” and contribution to industry growth, safety, and sustainability.

Today, Bombardier is one of three manufacturers of intercontinental business jets, a category the company helped

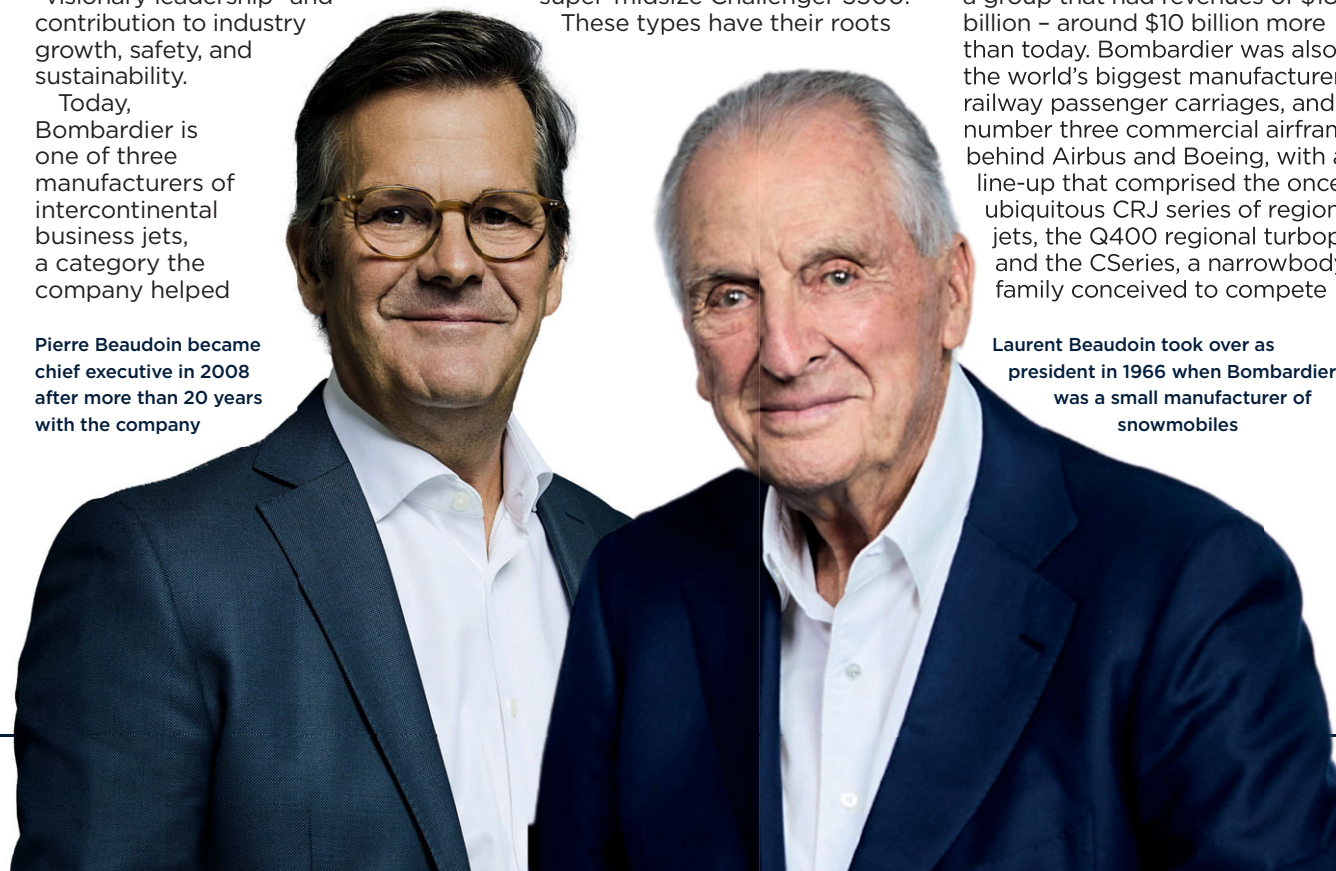
create with the original Global Express that flew for the first time in 1996. Alongside the Global family – the flagship of which today is the in-development Global 8000 – Bombardier offers the smaller but still large-cabin Challenger 650 and super-midsize Challenger 3500. These types have their roots

in the Challenger 600 design the company inherited when it bought the assets of Canadair in 1986.

However, less than 10 years ago, business aircraft – which at the time also included the Learjet brand – was one of just four divisions within a group that had revenues of \$18 billion – around \$10 billion more than today. Bombardier was also the world's biggest manufacturer of railway passenger carriages, and the number three commercial airframer behind Airbus and Boeing, with a line-up that comprised the once-ubiquitous CRJ series of regional jets, the Q400 regional turboprop, and the CSeries, a narrowbody family conceived to compete

Pierre Beaudoin became chief executive in 2008 after more than 20 years with the company

Laurent Beaudoin took over as president in 1966 when Bombardier was a small manufacturer of snowmobiles



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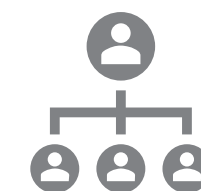
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It was the decision to launch the CSeries in July 2008 – a month after Pierre Beaudoin was promoted to chief executive – that ultimately led to the consolidation that changed the shape of the business and almost certainly ensured its survival. Wracked with debt from huge development costs, programme delays, and sluggish orders for the Pratt & Whitney PW1500G-powered narrowbody – and with investors running out of patience – Bombardier was forced to shed loss-making activities and raise billions of dollars in the only way it could: selling the family silver it had accumulated over the decades. All of it, that is, except its business aircraft.

The slimming-down began in 2018 with Bombardier offloading its majority ownership of the CSeries to rival Airbus, which renamed the aircraft the A220 and took over its Montreal production plant. Two years later, Bombardier sold its remaining shares in the programme to the European manufacturer and the government of Quebec, which retains a 25% equity stake.

While little or no money changed hands, Bombardier was able to transfer responsibility for considerable debts and liabilities to the new owners and write off what had been a crippling expensive venture. And while the CSeries almost destroyed the company, Bombardier could be proud of the fact that Canadian engineers had created a highly innovative aircraft, and it had at least attempted to break the US-Europe duopoly.

#### Divestments

In 2019, it was the turn of the Q400 to go. The largest and last in-production member of the Dash 8 family of regional turboprops, the programme was purchased by Longview Aviation Capital. Longview relaunched the aircraft as the Dash 8-400 under the revived De Havilland Canada brand but has yet to resume production. The rebranding took things full circle. The original De Havilland Canada had unveiled the Dash 8 series in 1984 before being bought by Boeing two years later and Bombardier in 1992.

In 2020, Bombardier announced the sale of its Belfast-based aerostructures operation, the former Short Brothers – which also had facilities in Casablanca and Dallas – to Spirit AeroSystems in a transaction valued at \$1.2 billion. The business's crown jewel was the all-



CRJs became the most successful regional jet family of all time

composite wing that it had designed and built for the CSeries, and now supplied to Airbus.

There were more divestments to come. That year, Bombardier also concluded the sale of its CRJ programme to Mitsubishi Heavy Industries in a cash deal worth \$550 million. It marked the end of a three-decade era for the regional jet programme. Bombardier launched the Canadair Regional Jet as a 50-seater in 1989, basing it on the original Challenger business jet. It followed that with three stretches: the 70-seat CRJ700 in 1997, the 86-seat CRJ900 in 2000, and the 100-seat CRJ1000 in 2007.

Although sales were running out steam by the time of the pandemic, it is difficult to exaggerate how the CRJ family helped transform regional aviation, particularly the US hub-and-spoke system which developed after airline deregulation in 1978, with major carriers relying on affiliate regional operators to feed passengers into their base airports. Forty years later the CRJ series had become the world's most successful regional aircraft programme, and around 1,300 examples are still flying.

Bombardier's railways interests were even older than its presence in aviation. With the elder Beaudoin still new to the role and keen to expand the business internationally and into different sectors, the company entered the market in 1970 by purchasing an Austrian manufacturer of trams. It became a

serious producer of rolling stock in 1973 when the oil crisis hit production of petrol-thirsty snowmobiles and left the company with excess manufacturing capacity. A year later Bombardier won its first mass transit contract, to build 423 cars for Montreal's subway system. In 1982, a deal with the New York City Transit Authority positioned it as a North American leader in rail transit.

#### Relocation

After acquiring another major manufacturer, Adtranz, in 2001, Bombardier relocated its transportation headquarters from Montreal to Berlin, a move that recognized Europe as the largest rail market. And it was to a European company and rival – Alstom of France – that it finally sold its rail business in January 2021 in a deal worth \$3.6 billion. It was the final divestment that left Bombardier as a business aviation specialist.

However, that was not the last Bombardier unit to go. In February 2021 came the long-anticipated news that Bombardier was to stop producing Learjets – it had acquired the Wichita-based maker of light business jets in 1990. The brand itself dated back to the iconic designs of Bill Lear in the early 1960s, who helped inject glamour into the emerging world of private aviation, as Learjets became synonymous with Hollywood stars, Las Vegas high-rollers, and Wall Street titans.

The Learjet business had been

struggling for some time. A 2008 attempt to launch a new variant, the all-composite, midsize Learjet 85, failed when the development was cancelled in 2015. The remaining models, the Learjet 70 and Learjet 75, updates of the Learjet 40/45 launched under Bombardier in the early 1990s, were struggling in a crowded segment against competition from the likes of Textron Aviation's Citation jets, Honda Aircraft, Pilatus, and Embraer.

According to NBAA president and chief executive Ed Bolen, the Beaudoins "exemplify the pioneering spirit" of the award. "Their trailblazing leadership drove the creation of entirely new market categories for business and commercial aircraft and helped set the standard for excellence in safety and sustainability."

Between them, father and son have spent a combined 94 years with Bombardier. Laurent retired from the board of directors in 2018, while Pierre joined in 1985, became president of the business aircraft division in 2001, and has chaired the board since 2017.

**Previous winners of the Meritorious Service to Aviation award include industrialist Donald Douglas; astronaut Gene Cernan, the last man to walk on the Moon; aviator and entrepreneur Clay Lacy; and the Tuskegee Airmen, a group of African American pilots who overcame prejudice to fight in the Second World War.**



The Global 7500: Bombardier launched its predecessor, the Global Express, in the 1990s



Bombardier launched the Q400 after acquiring the De Havilland Canada business in 1992

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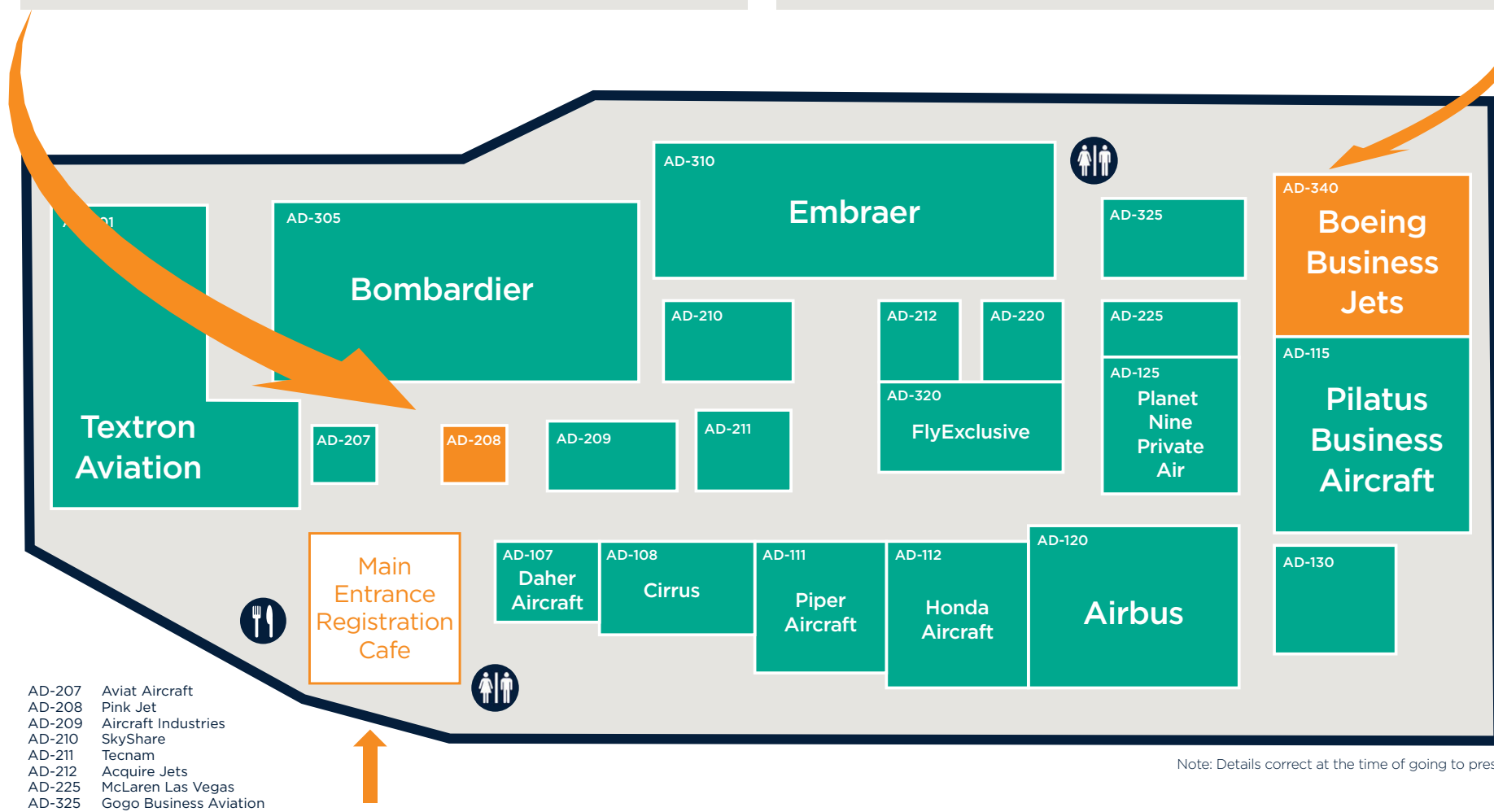
**Aerial Angels L-39 The Pink Jet**

Making its NBAA BACE debut – aptly during Breast Cancer Month – is this hard-to-miss pink Aero Vodochody L-39 Albatros, operated by Aerial Angels, a non-profit that aims to raise awareness of and raise funds to fight the disease, particularly among the aviation community. The former military trainer is piloted by an all-female crew.



**Boeing Business Jets BBJ-1**

Monaco-based aircraft trader Opus Aero is offering for sale this recently refurbished BBJ-1 (serial 28579), on display on the Boeing exhibit. The jet, capable of accommodating 16 passengers, comes with two VIP bedrooms, each equipped with lavatory and shower. Cabin viewings are by appointment only.



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