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UAS International Trip Support

Mohammed Husary, Co-Owner, Founder and Executive President
Omar Hosari, Co-Owner, Founder and Chief Executive Officer

High Net Worth Profile: John Paul DeJoria



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Foreword

Even in a world of Brexit and Trump, this was unexpected! Editing *Executive & VIP Aviation International* had never been on my list of things to do, but as 2016 turned into 2017, the possibility arose and quickly became reality. So after just a little more than eight weeks' whirlwind activity, here's the Spring 2017 issue, my first, and what the folk in the EVA office confusingly call the ABACE issue.

My publishing background encompasses a good deal of business aviation, but I work across a broad swathe of subjects, including test flying, commercial aircraft cabins and contemporary military operations – I edit *Review* and *Salute*, the official Royal Air Force annual publications too. As I put this issue together I delved deeper into business aviation than ever before, reaffirming my belief that yours is an extraordinary industry, populated by exceptional folk creating and using world-leading technology.

I called on many already busy people to help me complete this issue and you have my eternal gratitude for making it happen – without you there'd be no Spring 2017 EVA. To those of you who did your very best but just couldn't get back to me 'by the end of the week', my thanks for trying and let's make it happen for the Summer 2017 issue. It'll be out, should everything go to plan, in time for EBACE. Finally, to those of you on whom I've yet to call, there are plenty more EVAs to come...

My aim as I move forward with EVA is to continue delving into the industry, talking to extraordinary people and exploring exceptional technology. I'm hoping EBACE will be an opportunity to meet as many of you as possible. Since EVA is really your magazine, I welcome your thoughts on its new direction, and suggestions for its future.

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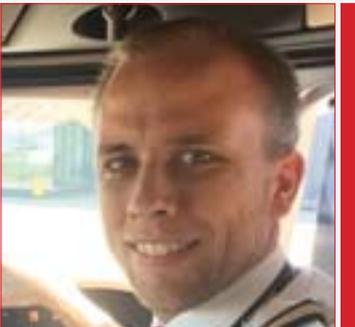
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Accessing the Inaccessible

UAS International Trip Support

In less than two decades, UAS International Trip Support has grown into a global business and VIP facilitator, enabling every conceivable aspect of travel from catering to overflight permits. Its vast, complex array of services, delivered by a multinational workforce, is delivered under the watchful, enthusiastic eye of brothers Mohammed Husary, Co-Owner/ Founder and Executive President, and Omar Hosari, Co-Owner/ Founder and Chief Executive Officer, who teamed with Mamoun Milli and Mohsen Felo to create the company back in 2000.

Your father's pioneering role in Middle East aviation inspired you with a lifelong passion for aerospace. Today, 17 years after forming UAS, does that passion still drive the business?

Mr Mohammed: We have a deep-rooted love of aviation, passed down from our father, Hisham. During the 1950s he was involved in the development of Middle Eastern civil aviation infrastructure and his pioneering spirit continued in us, providing the spark that began UAS International Trip Support. We wanted to establish a company that provided flight support to international destinations that had previously been inaccessible.

Mr Omar: Our passion for aviation inspired us to establish UAS International Trip Support in 2000 and it continues to drive us today in our constant effort to improve the user experience. To do that it's necessary to keep developing our solutions provision so it adds massive value for our clients. I see our passion for aviation and our wish to develop and provide superior solutions as co-dependent.

UAS has a vast international team of suppliers. How is their compliance with UAS's high standards monitored and assured? How has the business grown to expand into every area of trip planning?



Husary family
with their father

Mr Omar: Our clients need to know that their operation is safe in our hands, and that no element of it will fall short of their expectations. UAS has in excess of 1,400 preferred international vendors creating a global support network that ensures we deliver our commitment to operational excellence and maintain the UAS standard of quality.

We have an exhaustive selection process when it comes to choosing suppliers. It's based on an evaluation by the stakeholders involved, client feedback, and an internal assessment of quality and service levels. To be a preferred UAS vendor companies must consistently succeed in delivering to the most demanding specifications, the highest quality and utmost cost-effectiveness.

Mr Mohammed: We developed the full suite of trip support solutions in response to the demand from clients, so it was a deliberate process, while at the same time taking a natural course. It's much more efficient to use one company for all your needs rather than trying to coordinate between many. So, as we grew, we enhanced our solution provision to become a one-stop shop for all aviation needs.

Looking at the UAS website, the words 'safety' and 'security' appear time and again. Is it fair to say that aviation safety and the safety of your clients at every stage of their UAS-organised trip is a priority?

Mr Omar: Safety and security is central to delivering the client experience that we as a trusted global ITP [integrated transport planning] organisation guarantee. In terms of security services, we can provide close protection personnel quickly and efficiently, secured vehicles equipped with state-of-the-art surveillance, personal bodyguards or full security team services for close protection of diplomats, VVIPs and other key personnel and assets.

We've also invested in our station manager network, located in areas where clients benefit from intense supervision, enhancing safety and security. Our station managers' local experience and insight means they can facilitate the optimal levels of attention and service necessary to ensure our clients and their equipment are safe and secure for the duration of their mission.

Compliance is also exceptionally important to UAS. Do you believe that insisting on the compliance of your suppliers helps you achieve the utmost service, even in regions where aviation infrastructure falls below accepted standards?

Mr Mohammed: We invest a lot of time listening to our clients so we know how best to deliver on their individual requirements, and we know exactly what concerns they have. We go the extra

the skills and experience of the next generation of aviation professionals. We sponsor several scholarship programmes, including the annual International Operators Scholarships, presented in coordination with the NBAA and the International Operators Conference Committee, which gives several applicants funds and support to develop their education in business aviation.

Our internship programmes give high school and college students the opportunity to work in the service-provider environment, obtaining real-world experience in dispatch, flight operations and customer service. Also, our recent collaboration with Hult International Business School in the US and the UAE – The Dubai Action Project and the Hult Action Project – offered mentoring to students of its accelerated Master's Program at Hult International Business School in Dubai and New York.



We have a deep-rooted love of aviation, passed down from our father, Hisham
MOHAMMED HUSARY

mile to ensure they don't have to worry about standards slipping, particularly for operations that involve stops in areas lacking well-developed infrastructure or access to services that are commonplace at established stations. We promise our clients the UAS standard of quality, which means they can be assured of getting the very highest quality available at any station. This requires us to be extremely discerning in our choices of supplier.

You support a comprehensive programme of UAS scholarships and internships. Why are these important to you?

Mr Omar: We feel duty-bound to contribute to the future of the industry we love. The best way to ensure its continued growth and prosperity is by enriching

Your charity and Orbis work are also important. Why?

Mr Mohammed: Just as we're committed to the future of business aviation, we also feel an obligation to contribute to the wider community. Orbis does incredible sight-saving work in some of the world's most underdeveloped countries, transporting eye surgeons and medical professional in its 'flying hospital'. The combination of its charity work and reliance on aviation as a tool made Orbis a natural choice for us as a charity partner.

Are your extensive Trip Support Services managed out of each headquarters office and how do the regional offices, station managers and representatives fit into the

system? Can UAS really arrange flights, to its high standards, to any destination?

Mr Mohammed: When we say we can get you to any station, it's because we can! We arrange for any further transport you need from the airport too. This is where our investment in local knowledge and expertise is vital to our success. We've four strategically placed continental operations teams in Houston, Hong Kong, Johannesburg and Dubai, taking care of global operations – they support our regional offices in Beijing, covering Greater China; Nairobi, covering East Africa; Lagos, covering Central and West Africa; and New Delhi, covering the Indian Subcontinent.

The UAS station manager network ensures the highest level of supervision and quality assurance at key global locations. UAS station managers know the aviation possibilities in their area inside out. They have a thorough understanding of the regulations, know the best people to contact to make things happen quickly and can be on the ground to make sure the operation

is executed smoothly. This is why our station managers are so crucial to our operational success and represent an offering that no other ITP can claim. Our clients rely on our global team and station managers for reliable, up-to-date NOTAMS, air traffic news and updates, regulatory requirements and local operational guidance that can affect the success of their mission.

Elsewhere in this issue there's a discussion of aviation weather and the connected cockpit. UAS is also a player in weather provision – how is your data compiled and presented?

Mr Omar: We use only licenced and trusted sources for weather data that are fully updated at a minimum of every six hours, 365 days a year, to ensure the very latest global weather information is available. It can be presented and tailored to whatever format is most beneficial to our clients. For example, we can provide weather analysis from origin airport, en route, and destination, including various types of weather chart, and current and forecast weather information at airports along the route being operated.

Mr Mohammed: There are various means of delivering weather data into the cockpit, but it largely comes down to aircraft and cockpit capabilities. Via UAS FlightEvolution – our recently launched flight planning and weather technology – we offer an industry first by offering weather data that can be accessed while the pilot is offline and has no internet connectivity. UAS

FlightEvolution automatically downloads 48 hours' worth of weather data when it's online, storing it in the client's FlightEvolution database, ready for pilot access at any time. When the tool is reconnected



with WiFi, the weather data is fully refreshed automatically.

We also offer pilots ACARS text weather data upload via datalink. And we provide weather charts and data from a dedicated portal that pilots access from their iPad or EFB when they have WiFi connectivity. And of course, we can send weather information as conventional pdf or Word attachments to any email account the client nominates.

UAS has a particular competence in gaining overflight permits. What's the key to its success in this delicate operation?

Mr Mohammed: The key to our consistent success in obtaining permits – often at extremely short notice – is the continuous collection, update and follow-up of countries' regulation and requirement data. This means we have the most relevant information and can act quickly, saving our clients time. Also, after almost two decades, we've accumulated rich experience in dealing with authorities worldwide and are fully aware of different administrative processes.

Under its Executive Travel Services banner, UAS offers a



I Mohammed Husary



variety of personal services from hotel bookings, through arranging entry visas to providing close security details. These require staff with diverse, expert knowledge. Is their motivation and integrity critical to UAS's continued success?

Mr Omar: The UAS Executive Travel team members truly live and breathe their work. Their passion is extraordinary and integral to our success. They're available to our clients around the clock, 365 days of the year. Their extensive experience and expertise allows us to partner with leading hospitality brands so we can guarantee a premium travel experience. And I doubt there is any situation or last-minute request they haven't heard, and delivered on. They are a truly great team.

Your international team includes people of 50 nationalities speaking 42 languages. Does this leave UAS with a better understanding of regional sensitivities, cultural differences and expectations?

Mr Omar: Fifty nationalities certainly ensure massive diversity and a great melting pot of ideas!

Mr Mohammed: We believe great vision begins with great people and look for extra qualities beyond pure expertise and rich aviation experience. We're entirely client-centric, so our employees must have the same perspective – we attract great communicators and problem solvers, and we always keep a focus on cultural diversity and gender equality in our HR strategy.

What has been the most difficult challenge in growing UAS to its present global position?

Mr Mohammed: There are always challenges in business, particularly when you're ambitious and think big. But our philosophy is that we don't see them as challenges, but opportunities. Our ethos as a dynamic solutions provider demands that we always strive to respond to the constant changes in the market.

How do you envisage UAS growing/ changing in the next decade?

Mr Mohammed: We have just completed an historic strategic alliance with Deer Jet, which saw it become the major shareholder of UAS. So I foresee the next decade being incredibly exciting in terms of enhancement in our capabilities. Since Deer Jet operates as a wholly-owned subsidiary of HNA Group (a Fortune Global 500 company), UAS will have more opportunities to serve the group's airlines.

However, UAS Group executive management continues under the leadership of myself and Omar as co-owners/founders, Executive President and CEO, respectively, and we'll be focusing on accelerating our strategic goals. I can see the next decade as a time when UAS transforms the flight user experience. Our concentration will remain on growing our

business organically and expanding our strategic partnerships, while keeping the development of our technology at the top of our priorities.

Mr Omar: We foresee significant enhancement of our technology over the next decade. We've just launched UAS Evolution, the flagship product from our technology suite, and we'll be launching more tools in the coming months. UAS Flight Evolution is a truly revolutionary flight planning and weather tool with unique capabilities and a refined simplicity that's gaining hugely positive feedback within the industry. We'll be completely revamping the user experience and the industry status quo in this area over the next ten years.

What have been the most significant changes in business aviation in the last decade?

Mr Mohammed: The growth, expansion and popularity of business aviation have been the major changes. There are many new operators and there has also been a significant increase in FBO networks. The quality levels of



| Omar Hosari



Fifty nationalities certainly ensure massive diversity and a great melting pot of ideas!

OMAR HOSARI

service delivery have greatly improved, thanks to initiatives to have quality assurance and safety reviews based on general aviation requirements.

What do you think will be the most significant changes in the next decade?

Mr Mohammed: Technology is evolving quickly, as proven by our own technology developments. I think this will be the most significant change, with more consolidation in the industry. The challenge for operators and dispatchers will be to keep up with these developments so their operations benefit from the advances. Also, I think we will see more regulations concerning the use of drones.

What are your personal ambitions for the next decade? What about for UAS?

Mr Mohammed: My personal ambition is to continue being successful and reach an optimal balance among the key elements in my life: family, business, education and health. As for UAS, I can visualise the day when it becomes a reference for changing the shape of the industry through creative new trends and developments in user experience, which I hope to bring about in our aviation services in the coming years.

Mr Omar: I plan to achieve a PhD in Business Administration. Regarding UAS, it's my ambition to see us become the undisputed world leader in international flight support over the next decade.

Have you a personal defining aviation moment?

Mr Mohammed: Mine was during an evening of contemplation in May 2000, when I had the first spark of the idea to establish UAS, chose the company name, base and structure, and its vision for the next decade. I still remember that evening and the challenges along our way, and I'm very proud to have witnessed UAS become a truly global leader in the industry, proving that the long years of hard work and determination did not go in vain.

Mr Omar: Personally, mine was when I knew I had to create UAS – the realisation of how important the work would be. Professionally, I would have to nominate the day we finalised our partnership with Deer Jet. It was the realisation of our objectives and the reward for much hard work and negotiation. I'm exceptionally proud of what we've achieved. ■



Mr Mohammed and Mr Omar with Zhang Peng, Deer Jet Chairman and CEO



Skylink Services Ltd is well-established and well known for the provision of ground handling services for Executive and Military Aircraft in Cyprus. It began operations in 1998, filling the gap in the Executive Aircraft ground handling market at both Larnaca and Pafos International Airports of Cyprus.

Over the last decade the company has grown significantly in size and reputation. Skylink Services owns and operates the only FBO facility at Larnaca Airport offering around-the-clock professional VIP aircraft and passenger handling services. Currently representing over 400 companies that own or operate executive aircraft worldwide, the company caters to aircraft ranging from very light jets to larger aircraft such as Boeing 747 and Airbus 340 and we are the preferred choice for most VIPs, celebrities and business persons travelling to or from Cyprus.

Skylink Services also manages and operates the Heads of State Lounge facility at Larnaca International Airport. This lounge is used by all Heads of State visiting the Republic of Cyprus as well as a host of other visiting dignitaries. Optimum and problem-free operation is evidently crucial as over the past few years the General Aviation

Terminal was used by Pope Benedict XVI, on 6th June 2010, when he completed a historic official visit to Cyprus. In addition, the terminal was used for the Heads of State during the second half of 2012 when the Republic of Cyprus was hosting the EU Rotating Presidency. Numerous Presidents and dignitaries have also used the terminal on official visits to Cyprus i.e. Vice President of the United States Joe Biden, Former President's of the United States Jimmy Carter & Bill Clinton, President of Russia Mr. Medvedev, former EU commissioner Barroso and current EU commissioner Juncker, German Chancellor Angela Merkel and many others.

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J O H N P A U L
DeJoria

From homeless salesman
to \$4-billion empire

“Success unshared is failure,” says billionaire philanthropist John Paul DeJoria, co-founder and Chairman of the Board of John Paul Mitchell Hair Systems. The world’s largest privately held salon hair care line, it’s now worth \$3.3 billion. DeJoria is also co-creator of The Patrón Spirits Company (said to be worth \$6 billion), which produces the world’s number one ultra-premium tequila. DeJoria’s other businesses include Marquis Yachts, ROK Mobile, a no-contract low-cost mobile carrier, and his latest passion, a natural dermatologist-developed cold sore treatment.

It’s difficult to believe that Los Angeles-born DeJoria, whose father left when he was two, once collected discarded bottles for cash, was twice homeless, worked as a janitor, paperboy and encyclopaedia salesman among other jobs, and gave all the money he earned to his mother.

A few years later DeJoria, along with his partner, Paul Mitchell, created John Paul Mitchell Hair Systems with just \$700; DeJoria first sold the hair products from his car. Now, this pony-tailed 72-year old is among the world’s richest billionaire entrepreneurs, yet he spends most of his time helping others.

DeJoria recently completed *Good Fortune*, a documentary about his mission to change the world by inspiring others to do good. “You don’t need money to make it,” he says. “You can give back with your time.” His many charitable investments span the core values of his companies: sustainability, social responsibility and animal-friendliness. Among his many philanthropies, he helps create housing and job opportunities for the homeless in Austin, Texas; founded Grow Appalachia to produce nutritious food for disadvantaged Appalachians; and is the major contributor to Food for Africa, protecting children who have lost parents to AIDS.

DeJoria has built schools, supports clean water efforts and helps conserve rainforest reforestation projects. He met with Nelson Mandela to talk about land mines and eradicating HIV, and exchanged ideas on world peace with the Dalai Lama. DeJoria has signed Bill Gates’s and Warren Buffet’s ‘The Giving Pledge’ as a formal promise to give back half his wealth. We caught up with this busy philanthropist entrepreneur at his home in Austin.

You had many jobs as a teenager, and after you left the Navy. Then, you became homeless. How did that happen?

I was 22 and in between jobs. I came home one day in our only car and my wife said she had to run down to the store. I gave her the car keys and she took off. When I got upstairs, there was my son sitting in the middle of the floor with a little pile of clothes and a note from my wife saying, “Sorry, can’t handle being a mom anymore. He’ll be much better off with you. Good luck. Good bye.” She’d cleaned out what little money we had and she hadn’t paid the rent or utility bill for three months. I was evicted, and ended up getting a car that I slept in with my son. I was too proud to ask my mom for money or for my old bedroom back, so I collected soda pop bottles.

Did you end up raising your son alone?

Yes, until he was about 6 years old. Then suddenly his mother showed up out of nowhere and wanted to raise him. I don’t think she wanted to be a mom; I think she wanted the cheque she received for being a dependent person. Anyway, my son wasn’t happy, so I got him back and finished raising him. It wasn’t easy.



Mineseecker Foundation patrons have included Nelson Mandela, Sir Richard Branson, John Paul DeJoria and Brad Pitt

What did your mother teach you?

She taught me and my brother that we could do anything we wanted if we really applied ourselves. She also taught me the power of giving. One Christmas in the early 1950s, she made my brother and I put our only dime into the Salvation Army bucket and said, “Boys, remember, in life there’s always somebody that needs it more than you do.”

Did you ever have a mentor?

No, but a couple of people, including my 11th-grade teacher, told me and Michelle Gilliam we’d never amount to anything. Michelle Gilliam became Michelle Phillips of The Mamas & the Papas, so we both did okay!

In 1971, you were working for a hair company as a district sales manager. How’d you end up working for a hair company?



I was bored at my job as a circulation manager at Time Inc. and asked my boss how I could get a promotion. He said, “You’re 26 years old and you have no college education. Ask me when you’re 35.” So I left and went into professional hair care sales.

And then you met Paul Mitchell, the hairdresser?

He was trying to start a company, but his products weren’t that good, so I tried to help him out. It was a disaster and we had to reformulate everything. I suggested starting a company, together with an investor who was going to put up half a million dollars. Inflation in the US was 12.5%, unemployment 10.5% and interest rates, if you could get a loan, were about 17%. The investor backed out, so we each put in \$350 – I borrowed some from my mom – and we started the company with \$700.

Jean Paul Mitchell is worth at least \$3.3 billion. A lot of public corporations have offered to buy your business – why won’t you sell?

Paul Mitchell will never be for sale because when I started with nothing, I told hairdressers, “Guys, if you believe in us, we’ll always stay in the professional hair care business to support you and to give advice to customers – we’ll never let you down and I’ll keep my promise to you forever.” I own the majority and put in a 360-year trust, so no matter what happens to me, no one can take it out of the professional salon business. It’s being ethical.

What was it like finally being a boss?

It was wonderful. When I could finally hire one person – obviously, today we have thousands – I could do what I wanted. I could treat people like good human beings, like very important people, not like jerks, the way I was treated.

How has your rags-to-riches background affected your way of doing business?

It’s given me humility for people and the ability to appreciate them. For example, as soon as I could afford it, everyone who worked for me at Paul Mitchell received free lunch and they still do. I remember times when I had 90 cents – you can’t get much for that and I never forgot that. Even our warehouse people get free lunch and I extended that to Mexico, where 1,600 people make and bottle Patrón; everyone gets free lunch. If you work for me on the night shift, you get free dinner.

I understand your love of tequila brought you to Mexico in 1989. Did you go there in hopes of creating a tequila?

No, not at all. I was with my friend Martin, drinking the awful tequila of the day, and we decided to make a tequila you could sip, that didn’t make you crazy or sick the next day. We created the smoothest of tequilas in a hand-blown recycled glass bottle. We sold it for \$37.95 a bottle, whereas the average tequila was \$4 or \$5 a bottle. People were reluctant to spend so much, but after a while they wanted to treat themselves to the best.

We never took away from the high quality and now we produce over 3 million cases of spirits a year.

To what do you attribute your success in this venture?

Keeping the product consistent, never taking away cost-wise what it takes to keep it this way, and giving back. Our Patrón employees know we help the world become a better place because of the charity events we do. While many people stopped supporting Katrina years ago, we're still building houses in New Orleans' St Bernard Projects. We help people out in Mexico, the US and other parts of the world with charitable events.

Your company John Paul Pet makes a line of shampoos and conditioners for pets, which are tested on humans first. Are you the first to test products on humans?

When I was a national manager at Redken, there were little marmoset monkeys that just sat in cages all day long because it made the company look as though they experimented with animals for safety. I said, "But we don't make products for animals, we make them for humans!" I was terminated a couple of months later. When I started my company, I made it a policy never to test on animals. We test all the shampoos and conditioners on ourselves.

And you have a new service called ROK Mobile?

We're changing the way people think about cellular phones in their lifestyle. ROK Mobile provides consumers a no-contract mobile carrier delivering nationwide 4G LTE coverage and unlimited voice, text, data and music. It also includes accidental life insurance, burial insurance, roadside car service, and Telemedicine 24/7 (a doctor is on the other end if you've got your smartphone), for just \$49.95 a month.

Your newest product is Aubio. When did it go on the market and what is it?

Aubio is a plant-based treatment for cold sores. Two-thirds of the world's population – 3.7 billion people – have the cold sore virus. I believe plants will be the answer to many of our medical challenges and treatments in the future and I'm a big believer in saving plants and water.

What are you most passionate about right now?

On behalf of all the hairdressers in the world I bought the Sea Shepherd Conservation Society

a Coast Guard cutter so they could chase down boats involved in the destruction of habitat and the slaughter of wildlife in the world's oceans. I'm also very passionate about a new programme in Austin called Mobile Loaves and Fishes. We're building a community of 250 small homes to get the homeless off the streets, into a place where they can live and work in gardens, animal husbandry and the like. We have a metal shop and a wood shop. This could be the answer to the homeless problem in the US, where you give people a home and work to do. They're not on welfare; they have work, so they can pay the \$90 a month rent.

What are the most important leadership lessons you've learned since you've been in business?

Whenever you criticise somebody, always do it behind closed doors and one-on-one. Secondly, always make sure that the quality of your service or product is so good that people will want to reorder.

What's the biggest business mistake you've ever made?

There have been several people in my life that I really trusted and I believed what they were saying was correct, but it wasn't. That was my fault for not checking out what they were doing or telling me.

Were you going by your gut?

I thought I was, but I wasn't paying attention.

You fly privately and own your planes. What do you fly?

A Dassault Falcon 2000, a Gulfstream GIV and a Learjet 60. The Learjet is being marketed right now. I'll hand-sign the plane, along with a special bottle of Patrón, with the new owner's name on it. I lease the GIV out because the market tanked on GIVs, and the efficiency of the Falcon 2000 means it uses less than half the gas the GIV does. It makes more sense for me to have a nice plane that'll fly around, but use half the gas. The GIV would be sold, but the market is down, so we lease it out each year. I have a partner on that.

What is the purpose of your flights?

Mostly business and philanthropy.

How much do you think you fly privately in a typical year?

I'm on the road probably one-third of the year.

Dassault Falcon 7X image copyright: Sebastien Rande

If you were going to upgrade from your Falcon, which jet would you buy and why?

I'm thinking about upgrading next year. I'd go from the Falcon 2000 to possibly the Falcon 7X. The 7X is one of the greenest planes ever made. It's extremely fuel efficient, using half the fuel a GIV would use, it has international range and when flying up at 35,000ft, the altitude for passengers is only 3,900ft. And it has the range of a GV.

Does an aircraft management company manage your planes?

Yes, my own. I've had a partner, Hadi, and his son Dennis, for more than two decades. The company is called Royal Jet.

How close an eye do you keep on expenses?

My partners watch all that really well.

When you're visiting a new destination, do you leave the decision on which FBO you'll arrive at to your flight ops team or pilot?

I leave that to my pilot. The big differences are in the fuel cost and the convenience of where I'm going.

Why do you fly privately?

It would be impossible to run the businesses or do the philanthropic things I do if I didn't have a private jet. I couldn't make two stops in one day, I couldn't be as flexible. Often it makes more sense to spend that extra money for a private jet. I've become two to three times as proficient and efficient at what I do because of our private jet, and I'm able to do a lot of things I'd never be able to do otherwise. Anytime someone considers, "Should I buy a private jet? Should we have a leasing programme for my executive



I believe plants will be the answer to many of our medical challenges and treatments in the future and I'm a big believer in saving plants and water

manager to fly around?", do consider it, because even though it costs money, time is money, and flying privately can be extremely valuable.

How does flying privately help with your philanthropic efforts?

It lets me go one place and then I can immediately fly to someplace else and, while I'm there, check on what we're doing philanthropically. At the same time, I can turn around and fly right back to the next business appointment. Flying privately also enables me to sometimes fly to places commercial flights don't go.

You certainly don't need to work for a living anymore, so why do you continue to work and keep creating new businesses?

I love what I do, I have the energy to do it, and I like the fact that I can create many jobs for a lot of people in making a good business that makes them feel proud.

And what do you think is the secret to your success?

I'm enthusiastic about what I do and I love it.

What's left for you to do?

My God, I've just gotten going! I'm only 72 years old and with today's technology, enthusiasm, and the right thinking, I can live to be over 125! ■





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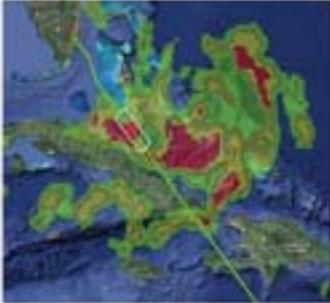
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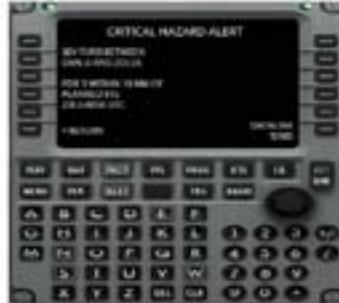
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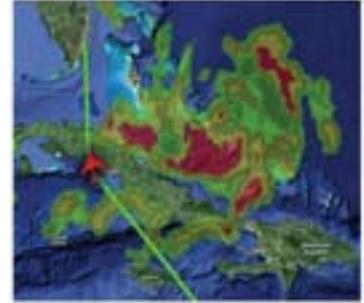
Typical SD GeoServices displays showing a planned route, critical hazard alert and diverted route



Example of a Planned Route



Example of a Critical Hazard Alert



Example of a Diverted Route After Alert

Smoothing the ride

Weather & the Connected Cockpit

Cabin connectivity has become something passengers expect in business and commercial aviation. Business and VIP passengers demand video conferencing, email, web browsing and live content just as they would in the home or office – and with the latest Ka-band and 4G systems, at last they’re enjoying something that comes close.

Yet facilitating business and keeping us entertained are but two connectivity-enabled functions. Perhaps more significant are the enhancements broadband connectivity has delivered into the cockpit. Flight planning, maintenance schedules, live operational updates and complex safety data are being sent to cockpits in flight, in near

real time, for display on cockpit screens, iPads and other devices.

Pilots are now better informed about the weather than ever before. The latest weather products are delivering the strategic picture and turbulence reports directly into cockpits, complementing weather radar data or providing comprehensive weather pictures to aircraft without radar.

Honeywell Technical Sales Manager Jeff Hester notes that its IntuVue weather radar is available on the Falcon 8X and Gulfstream G650, but explains that the company’s Weather Information System (WIS), “...has been available to business jet subscribers for a number of years”. Now updated as WINN (Weather InformatioN Network), it’s available to business jet operators and airlines alike. The system collects crowd-sourced weather data and delivers

it into subscribers’ cockpits, typically for display on an electronic flight bag (EFB).

Now, thanks to modern connectivity standards, Honeywell is working towards downlinking IntuVue data from equipped aircraft and merging it into a crowd-sourced product, creating a system far more capable than WINN alone. “The composite weather obtained from crowd sourcing IntuVue radar data will be uplinked to provide near real-time, worldwide radar images to WINN subscribers. Customers connected to WINN via satcom will have global coverage,” Hester says.

“Today, WINN is not intended to replace on board weather radar, but to complement it. The on board radar is still the best way to generate to-the-second, high-resolution weather data describing what’s in front of the aircraft, with individual cell resolution for

tactical decisions. WINN is more useful for routing around weather systems and long-range strategic planning. For example, one of the weather layers provided shows predicted areas of clear air turbulence and commercial crews may decide to do a meal service earlier or later based on this, or may decide they should route around it. Having the weather along the entire flight plan allows for more optimal routing decisions because it shows extended systems that may go well beyond the 320nm radar range.”

Spilled Coffee

Clear air turbulence has caused many a cup of coffee to spill, but in extreme cases poses a real threat to passenger and crew safety, and Honeywell’s WINN is not the only game in town for its prediction. Last June, Gogo and IBM’s The Weather Company announced the insertion of the latter’s Turbulence Auto PIREP (pilot report) System (TAPS) turbulence detection algorithm into Gogo’s aircraft-based communications servers.

Lisa Peterson, Vice President of Marketing and Digital Strategy for Gogo Business Aviation explains: “The algorithm runs on the aircraft. The report is generated on the LRU and shared via Gogo’s server on the ground. The ground server and Gogo’s business systems gateway then route it to The Weather Company.

“Rollout began in late 2016 and currently there are more than 670 aircraft flying with the application. Although we’re just in the initial phases of the rollout, the application is gathering data and feeding it through the algorithm as planned.”

Gogo chose its Business Aviation unit as launch platform, given the broader range of altitudes its customers use compared to commercial

airlines. The moderate size of Gogo’s air-to-ground (ATG) antenna also means that smaller aircraft, possibly flying at much lower altitudes than an airliner or large-cabin bizjet, also feed data into the system – “As long as they have Gogo hardware and software, they’re contributing,” Peterson confirms.

A spokesperson from The Weather Company adds: “Business aviation fleets have unique characteristics in terms of routes, airports and altitudes that benefit all our customers. This is a great example of the Internet of Things in action, where we’re collecting massive amounts of data very quickly and then using that insight to provide guidance to all flights that will be travelling through impacted air space.”

Intuitively the product seems an offering only for Gogo customers, but that’s not so: “It benefits the aviation community as a whole. Basically, users can be active or passive. If they have a Gogo system they’re actively contributing to the crowd sourcing of the data – it’s done automatically. If they don’t have a Gogo system, it’s

still possible for an aircraft to use the app and passively consume/use the information,” Peterson confirms.

The application currently runs only on Gogo’s North America ATG network, but the algorithm continues its work even when the aircraft flies out of ATG range. “Reports are cached and transmitted to the ground once the ATG link becomes available again,” Peterson says.

Total Weather

Aside from its work with Gogo, The Weather Company offers a range of connectivity-enabled products founded on many years in the weather forecasting business. Its WSI Fusion, Forecast Services, Total Turbulence and Pilotbrief offerings all use weather data gathered via the company’s Internet of Things (IoT). This collects information from thousands of global weather stations – individual reporters, military and civilian airfields, satellites and platforms at sea. The whole is merged into a coherent picture by The Weather Company’s experienced aviation meteorologists and delivered into the cockpit or operations centre.

The Weather Company’s apps enable pilots to take strategic decisions based on current or predicted weather, hundreds and even thousands of miles down route. If snow is going to close the destination airport, for example, they’ll know hours in advance and begin planning around the problem. And they’ll know about storm cells even beyond the range of their weather radar and be able to better predict turbulence.

And if one of The Weather Company’s more comprehensive apps – like WSI Fusion – is in use, then weather and operational data sit side by side;

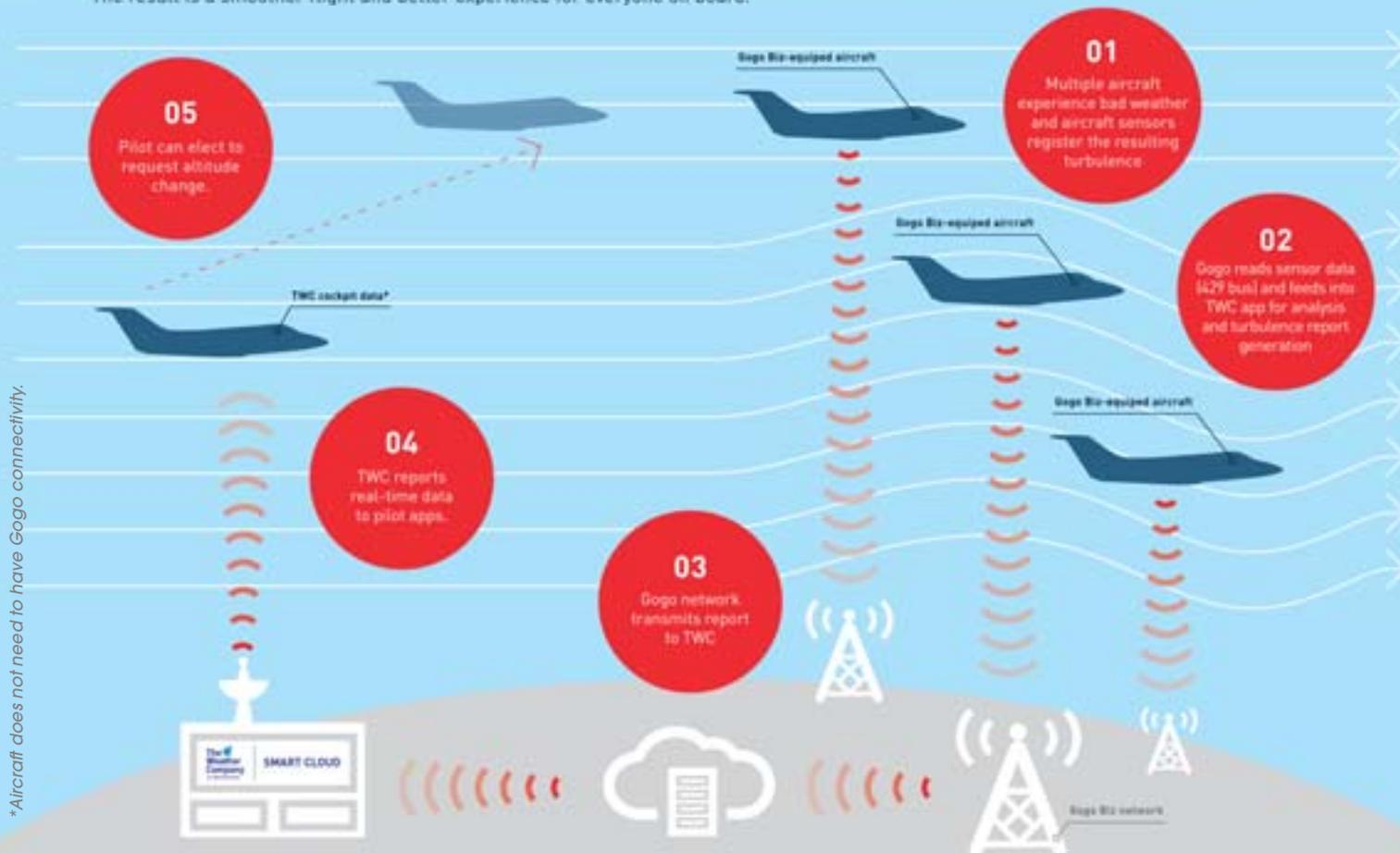


The Weather Company’s Total Turbulence product displayed on an iPad



SMART AIRPLANES TAPPING INTO REAL-TIME TURBULENCE DATA

Gogo and The Weather Company, an IBM business, use smart technology to enable delivery of real-time turbulence alerts to pilots, dispatch, and operations personnel. Gogo-equipped connected aircraft sense, aggregate and transmit turbulence data via the Gogo network. Gogo Biz network collects the data and transmits it to TWC, which calculates and reports it to other aircraft via TWC's apps. The result is a smoother flight and better experience for everyone on board.



*Aircraft does not need to have Gogo connectivity.

even more beneficial, thanks to high-speed connectivity, the weather data displayed in the cockpit is identical to that on the screens of the operations people back at base, further enabling rapid, quality decision making.

Weather Alternatives

Weather data has become a valuable addition to several connectivity products, including those from satellite communications specialists AirSatOne and SD. AirSatOne's Flight Deck Connect datalink solution offers transcribed weather information for pilots under its air traffic services component and METARS, PIREPS and winds aloft under its flight deck component. The company specialises in supplying connectivity via Iridium and Inmarsat services, although president Jo Kreamsreiter says: "Technically the customer does not need to subscribe to one of our packages to receive our

weather data, but most systems have other capabilities the customer wants to use.

"If the customer is using a weather app that provides a live feed on a tablet, they need access to the internet, which is typically through satcom. Iridium does not have a big enough pipe [it has insufficient bandwidth] to handle this, so the aircraft needs to be equipped with Inmarsat SwiftBroadband or ViaSat satcom systems. We provide web filtering and can block high-content media, but as a default we whitelist all the aviation weather and flight planning services so they pass through and don't get caught in the filters.

"With SwiftBroadband and ViaSat, flight crews have access, via a tablet, to flight planning and weather services – and flightplan.com has free flight planning plus weather information. What's nice about this is that the flying community is able to use its satcom internet for weather instead

of the proprietary SITA and ARINC network that has historically provided the feed to the avionics. As everyone knows, it takes years to integrate new technologies into the flight deck, whereas commercially available tablets are on top of the latest technology."

SD includes weather in its FlightDeck Freedom cockpit datalink service, while its GeoServices product provides weather alerts. Scott Hamilton, Chief Strategy Officer, Satcom Direct (SD) says: "Text weather data is available to all FlightDeck Freedom customers, while graphical weather is available to those with cockpit displays capable of displaying it. We source our weather data from Schneider Electric, with the exception of graphical weather for Epic-equipped aircraft, which is sourced from Honeywell.

"The Route Alert component of GeoServices includes alerts based on weather data and containing specifics

of the weather-related phenomenon that generated the alert. However, GeoServices alone does not provide a complete weather picture. Route Alerts are sent directly to the flight deck, but authorised users on the ground can see all data sent to or from the flight deck, including the Route Alerts. GeoServices could be considered a complement to weather radar, in that Route Alerts consider weather data that is not available to radar systems, including forecast turbulence and icing.”

SD’s service is compatible with the majority of datalink avionics, but does not deliver weather information into the cabin for passenger consumption. “That’s for our mobile app,” Hamilton says. Called SD Cabin, it includes a moving

map capability for display on passenger iPads. It shows the position and status of the aircraft, destination weather and weather along the route of flight.”

SiriusXM has been providing weather to business jets for many years, and SD

TAFs and METARs; extended forecasts; weather observations; graphical winds and temperatures aloft; echo tops; day one convective outlook; six levels of graphical turbulence; icing; and more. The specific content available to each



Text weather data is available to all FlightDeck Freedom customers, while graphical weather is available to those with cockpit displays capable of displaying it
SCOTT HAMILTON, SD

aircraft is dependent upon the display capabilities of the installed avionics.”

Like so much in aviation weather and its cockpit utility, SD’s offerings combine – SiriusXM provides

recently took advantage of that heritage, establishing an authorised reseller agreement to distribute SiriusXM weather data. Hamilton remarks: “SD’s the only reseller authorised to distribute the data to aviation users. It includes US and Canadian weather radar; cloud-to-cloud and cloud-to-ground lightning;

comprehensive weather data, providing a complete picture to the flight crew, while GeoServices uses weather data to provide specific alerts – to create an increased level of pilot situational awareness, enabling strategic decision making, more efficient routing and, most importantly, safer operations. ■

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SPOKEN FROM THE FRONT



Maxime Wauters, ASL's Safety Manager, Deputy Flight Operations Manager and First Officer in the Legacy 450's cockpit



London City? La Mole? Legacy 450!



In January 2016, Belgium's ASL and partner company Smartair introduced EMBRAER Legacy 450 OO-NEY as the first of its type registered in Europe and the first offered for charter anywhere in the world. Since then, ASL's Safety Manager and Deputy Flight Operations Manager Maxime Wauters, has been instrumental not only in the aircraft's success, but in clearing it for operations into two challenging airports, under his brief as pilot responsible for authorisation.

Just weeks after its delivery, Wauters led an effort to prove the jet's capability into La Mole-St Tropez, where a combination of short runway, terrain and unfavourable winds makes for demanding flying. Working closely with France's direction générale de l'aviation civile (DGAC, Directorate General for Civil Aviation) and EMBRAER, Wauters gained authorisation for regular flights into and out of La Mole, instantly making the Legacy 450 the largest aircraft capable of using the airport's 1,032m of available runway length.

For the jet's owner the authorisation meant direct flights to his nearby home – the Legacy 450 replaced a Citation XLS+ that lacked the airfield performance necessary for La Mole, necessitating an hour-long drive from Cannes or Toulon. For ASL's charter customers it meant the opening of a unique opportunity to land close to St Tropez and the jet remained at La Mole for the summer season.

Now ASL offers the possibility of flying from London City direct to La Mole, after Wauters and his colleagues gained authorisation to fly into the UK airport. An intensive day of classroom and sim learning with FlightSafety International in St Louis, demonstrated the Legacy 450's ability to negotiate ►►

OO-NEY off St Tropez,
during the proving
flights into La Mole.

Credit: Guillaume Voiturier



I don't know how EMBRAER did it, but they did a great job of soundproofing the cabin

the 5.5° steep slope approach into London City. It also set an interesting precedent in authorising a capability via the simulator – at the time of writing, the Legacy 450 had yet to visit City, although Flexjet first flew the larger Legacy 500 into the airport in May last year.

Unlike La Mole, London City obliged EMBRAER to modify the aircraft, albeit primarily through software updates. The only physical change placed a single new button in a cockpit console.

Flying Comparison

Maxime Wauters's previous experience was mostly on the Citation 560XL and XLS, with a little time on the CJ1, but he is emphatically a Legacy 450 enthusiast. For passengers he says the aircraft's cabin is incredibly quiet, a Legacy quality the crew notice too: "Modern turbofan engines are more than 60% quieter than older jet engines, but they're still quite loud. Their sound combines with the airflow generated by the aircraft's speed to produce the noise we hear in the cabin and cockpit. For our clients, quietness is a very important reason for using a business jet, it's part of the general feeling of comfort.

"I thought the Cessnas were quiet, but the Legacy 450 is really much quieter, especially at high altitude. I don't know how EMBRAER did it, but they did a great job of soundproofing the cabin. I think the airframe and wing design also plays a major role, but they used soundproofing technology in the engines and cabin. Our aircraft has a high-definition digital sound system and when the passengers watch a movie or listen to music we can barely hear the engines or airflow – it's very impressive."

As well as being easy on the ears, the Legacy 450 offers ample crew comfort thanks to its spacious cockpit. The Airbus-style sidestick, installed in preference to the more traditional yoke, makes a major contribution to a space that offers more pilot real estate, Wauters reckons, than a Falcon 2000. So why is space so critical up front? "Besides ensuring crew comfort – it's important on long flights – space plays a key role in cockpit ergonomics. Having lots of space allows you to organise your cockpit for easy access to documents (company manuals for instance) or your iPad (we're implementing the use of electronic flight bags) and easily store them when they aren't needed. A spacious cockpit also increases situational awareness, since pilots are able to quickly and efficiently scan the instruments and displays."

Thanks to clever design, the Legacy's retractable bi-fold table is impressively sturdy.

Credit: EMBRAER

The DGAC pilot who flew with Wauters on the La Mole authorisation was particularly impressed with the Legacy 450's cockpit ergonomics and Rockwell Collins Proline Fusion avionics, likening the flying experience to that of a Falcon 7X. The Dassault jet has the manufacturer's EASy cockpit, based on the Honeywell Primus Epic suite, but Wauters says the layout is reminiscent of the Legacy's. "The screens are mounted in the same 'T' shape, plus both aircraft have sidesticks, a trackball system in the centre console, and minimal switches and knobs; visually they are quite similar."

EMBRAER has also incorporated a much appreciated, yet rather prosaic pilot aid into the Legacy's high-technology cockpit. "The folding table at both pilot seats is a great tool," Wauters enthuses, "not only as somewhere to place drinks or lunch trays, but also for filling in paperwork and resting iPads. It makes a great contribution to the cockpit's ergonomics and organisation."



The way EMBRAER's configured the Legacy's fly-by-wire system provides excellent feel

Avionics

Proline Fusion embodies an extensive array of communications, navigation, safety and control technology, including Aircraft Communications And Reporting System (ACARS), Controller Pilot Data Link Communications (CPDLC) and e-charts, all of which Wauters appreciates in day-to-day flying, without forgetting the importance of basic flying skills. "Technology is there to support us in our various tasks, whether flying or monitoring flight parameters, but it doesn't replace the pilot. Proline Fusion also makes an important contribution to improved situational awareness by reducing pilot workload."



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“Being able to look outside is an important added value to safety. In business aviation we sometimes fly to remote, non-controlled airports. Hazards around them might include small VFR aircraft, terrain or other obstacles. Looking outside is vital, but so is knowing the aircraft’s technology is always there, improving our level of safety.

“The datalink, ACARS and CPDLC enable us to communicate digitally with other agencies, including air traffic control [ATC], maintenance, operations, and so on. In areas with CPDLC compatibility we use it rather than traditional VHF communication to interact with ATC. When regions are highly congested it contributes to a very important reduction in voice communication, ‘liberating’ frequency capacity for other users.

“We also use the systems to obtain weather reports in flight – it’s very useful if we’re expecting hazardous weather – or to get our pre-departure clearance on the ground. They can be used in flight to send e-mails to the company, should a problem occur, or to receive them, should they need to inform us of a last-minute change for instance. It’s really very useful!

“And of course, e-charts are an absolute must for reviewing airport departure, arrival, approach and landing procedures, they really facilitate briefings between the two pilots. The aircraft’s position is depicted on most approach charts, which is a great tool for situational awareness.”

There’s clearly no doubting Proline Fusion’s capability, but Wauters says it’s also extremely easy to work with: “I find it very user friendly, logical in concept and design, and built so that processes make sense. When you look for particular information, you know exactly where and how to find it. It’s typical of Rockwell Collins that there are always two or three ways to find the same piece of information, using different logic and interfaces – through the trackball or multifunction keypad, for instance. The system allows many information display formats, and it’s useful to setup a few standard layouts for certain phases of flight, but it enables comprehensive redundancy, which contributes to improved safety.”

He also describes the Legacy 450 as ‘smart’ – “It tells you when something is wrong and reminds you when to do the things it doesn’t do automatically.”

It’s typical of the Legacy’s subtle application of technology that the overhead cabin tech panels activate at the approach of a hand.

Credit: EMBRAER



Many of the maintenance benefits of a fault-alerting system are obvious, but Wauters says there's more to it than flagging a fault: "The maintenance people appreciate it of course, especially since it allows us pilots to easily identify technical malfunctions or faults that may be difficult to report.

"Engineers sometimes face huge challenges trying to troubleshoot malfunctions based on very basic pilot reports... 'Fuel pressure fluctuates' for instance, means nothing to maintenance. It could be anything from a malfunction of the gauge, through a sensor issue, an engine malfunction or a fuel supply system problem. Being able to clearly identify the root cause of a problem is very useful and accelerates maintenance processes. The system also tells you when to do things, when to download certain parameters for example, so that everything can be tracked in good time."

Fly-by-wire

Pilots have been known to bemoan the artificial feel of fly-by-wire control, yet Wauters says the Legacy 450's system makes flying pure pleasure, while the flight envelope protection system ensures

such smooth progress that it can be difficult to perceive whether the aircraft is on autopilot or not. "The direct link between the pilot's hands and feet and control movements prevailed for the first 80 years of aviation, just as with cars. Now our cars have directional assistance, auto-regulating cruise control, distance control, emergency auto-braking, lane assistance, park assistance and more, all breaking the direct link between driver and car, and it's exactly the same with modern aircraft. Fly-by-wire assists pilots and provides additional safety features to protect the aircraft from situations where we certainly don't want to be and where it would become unsafe. It doesn't remove responsibility from the pilot, nor reduce his or her capacity to interact with the aircraft systems and controls.

"The way EMBRAER's configured the Legacy's fly-by-wire system provides excellent feel. The aircraft immediately reacts to control inputs and in some situations or phases of flight – landing for instance – the flight control laws provide the feel of a conventional aircraft, with direct connection to the control surfaces."

Maxime Wauters describes operating into La Mole as ‘real flying’: “It’s back to VFR, hand-flying, looking around for other aircraft, helicopters, ultralights and birds. It’s great for maintaining our flying skills, which is so important nowadays.” Implied there’s a lack of opportunity in modern aviation to practise such flying?

With his Safety Manager hat on, Wauters says: “Based on the conferences I’ve been to and the studies I’ve read, I think pilots tend to rely on automation too much and may forget some of the fundamental ‘stick-and-rudder’ piloting skills. Of course, automation is great and aviation has never been safer than it is today, but there are more and more aircraft flying, with larger loads of passengers, cargo and fuel, flying higher, faster and further than ever before. So the severity of accidents increases, even if the likelihood of an accident is low, thanks to years of incredible commitment from the industry to improve standards towards a high level of safety.



Take-off on a cold day, at light weight, and the Legacy climbs like a fighter...

The ‘T’ shape arrangement of the Legacy’s Proline Fusion displays and uncluttered cockpit space ensure efficient ergonomics.

EMBRAER





“Aircraft have become so reliable that when something happens, the ‘startle’ effect can prevent pilots reacting appropriately. This is the challenge we face. Being able to fly manually and have some degree of freedom to perform visual/manual approaches on a regular basis as long as they’re safe, contributes to maintaining crucial piloting skills.”

Legacy Experience

“Every time we fly into St Tropez-La Mole we still feel exactly as we did the first time and realise just how well the aircraft performs. And now we’ve upgraded it for the steep approach certification and trained for London City in the simulator – which was great! We haven’t been there yet, but I’m sure it won’t be long. Hopefully ours will be the first Legacy 450 into the airport.

“But we get to fly into a lot of ‘challenging’ airports, with spectacular scenery, including Chambéry, the popular winter ski destination in France, and Sion in Switzerland. We also flew to Innsbruck, in Austria and Bolzano in the Italian

Alps, all of them great experiences. The avionics are a fantastic help at these airports and especially the enhanced vision system [EVS], which generates a digital graphical representation of the terrain, obstacles and airport on the primary flight display.”

The Legacy 450 opens up any number of destination possibilities for its owner and charter passengers, and exposes its pilots to new and interesting airports. Is it possible to sum up the piloting experience?

“We say that on the same trip we have the feeling of flying three or four different aircraft... Take-off on a cold day, at light weight, and the Legacy climbs like a fighter, but then it cruises like an Airbus or Boeing, with a very stable, smooth, quiet ride. Then we might perform an approach into St Tropez at a speed close to that of a Cirrus or Cessna 182 lightplane and land it very short. When we use maximum auto-brake we jokingly say its like landing on an aircraft carrier because of the system’s incredible stopping power. The Legacy 450 just feels safe. And, without doubt, it’s a lot of fun!” ■

ASL/Smartair took delivery of Europe’s first Legacy 450 in January last year.

Credit: EMBRAER

Later this year, users will begin streaming movies from nicemedia direct to their PEDs. *Credit: SD*



Inflight Movie

Optimising the viewing experience

We no longer expect to watch a movie at home. Instead we expect to be immersed in a movie experience, and it's an expectation carried over into the cabin. Consumers have been swayed by a raft of screen and content technologies, offering greater contrast, increased resolution, surround sound and, looking beyond much of the marketing hype, bigger screens just to impress the neighbours.

But there is much more to creating a truly immersive, top quality movie experience than a big screen and loud speakers. Ioana Predonescu, Manager for Custom Products at Lufthansa Technik/Panasonic joint venture IDAIR says: "High resolution and picture quality are key to delivering the optimal movie viewing experience. Technologies, including 4K and HDR, the size of the monitor, distance to it and viewing angle, combine to provide such an experience.

"Usually, larger screens provide an outstanding movie experience, but depending on airframe type the proportion between screen size and viewing distance is a deciding factor. It's often also a matter of personal taste. Viewing angle is also important. Just like in the cinema or at home, there are preferred positions and optimal seats. These are typically carefully considered during the cabin layout design phase."

There's also the question of content compatible with the new screen specifications: "The latest HD technologies require 4K/UHD or HDR content. Yet 4K content remains a rare commodity, although the number of options is growing," she says.

Cabin space and layout are clearly important in delivering the perfect inflight movie, so how do designers adapt their solutions to the available area? "The video and audio solution is usually scalable to suit the aircraft type. Larger screens, greater than 55in, are typically installed on widebodies, which may give the impression of a better quality movie experience than on a narrow body. But it's important to remember the influence of personal taste and preference."

IFE Backbone

For them to avoid becoming obsolete almost immediately, inflight entertainment (IFE) systems must offer considerable flexibility. Among them, Rockwell Collins' Venue is a market leader and Chris Jameson, Fellow, Cabin Systems Engineering, explains how the manufacturer aims to keep it that way.



High resolution and picture quality are key to delivering the optimal movie viewing experience

IOANA PREDONESCU, IDAIR

"Venue provides the best possible movie experience in a couple of ways. It was the first cabin management system to provide high-definition video to the business jet market, delivering 720p in 2008. Later in 2017, it'll be delivering 4K/UHD video as it continues to enhance the best movie experience.

"Secondly, due to its fibre-optic backbone, Venue has the ability to deliver compressed and uncompressed video to bulkhead and in-seat monitors in its native format. When the content is already compressed, as it is on a server with a solid-state drive or on a USB device, it

remains compressed until it's decoded at the monitor. When the content is uncompressed, from devices including Blu-ray players, Sat-TV equipment, or a camera, Venue delivers the uncompressed content directly to the monitors. This is important, because real-time encoding and compressing of this type of content adds latency and possible artefacts to the video content. Venue eliminates that and delivers the best quality video.

"Because of the rapid and continued display technology improvement in the commercial market place, Rockwell Collins will be adding a display electronic unit to the Venue architecture. This will enable it to supply all its unique video functionality to any monitor equipped with HDMI or dual-link 3G-SDI inputs, up to 4K resolution. With this, we'll be able to continuously support the best monitors with the best technology available."

Jameson mentions a 'fibre-optic backbone', but what does it do? "The 67Gbps fibre optic backbone enables Venue to support up to 22 streams of uncompressed 1080p video throughout the cabin, as well as 4K video to bulkhead monitors, for the best possible video quality. To date, connections to monitors have then been wired with coax cabling for uncompressed content and Ethernet wiring for compressed content. Venue also delivers compressed content to personal electronic devices via WiFi.

"Each of the Venue monitors has the ability to play uncompressed and

compressed content. This provides the ability to present the best video quality for each. Compressed content is delivered via the fibre-optic Ethernet backbone and each user can select any of the content that's available. Most of the compressed content is delivered by a server, and more than one user can control (pause/fast forward) and view the same content simultaneously."

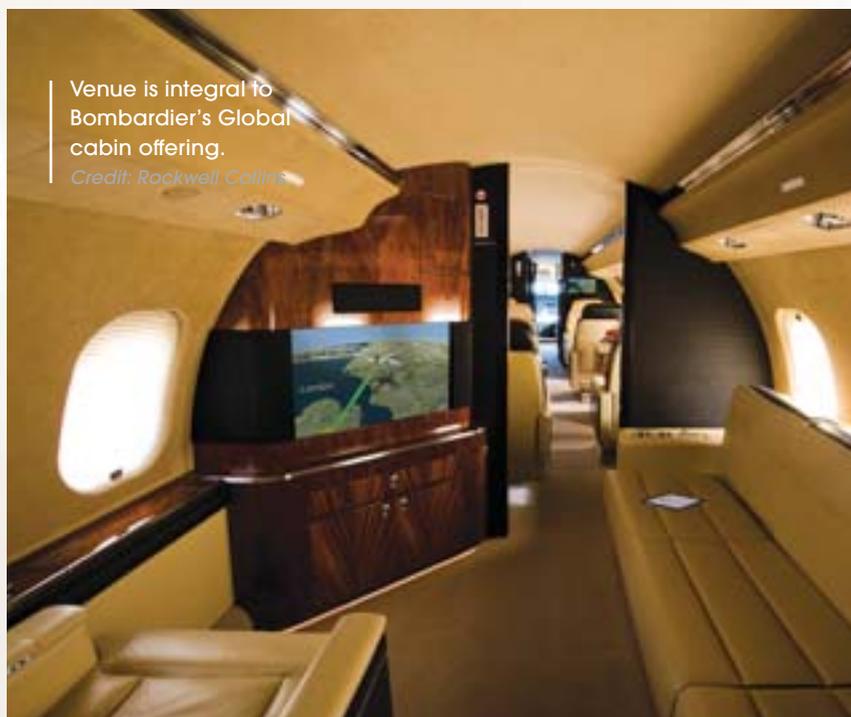
Crucial Content

While manufacturers grapple with the requirements for delivering HD content from Ultra HD Blu-ray DVD players and even via streaming server, there remains an insatiable appetite for inflight movies barely out of the cinema. These so-called early window releases are subject to detailed licensing agreements between service providers and studios, typified by the work Lufthansa and SD are doing as they prepare their nicemedia premium content service for mid-2017 launch. Via a lightweight 5×7×3in SmartBox, users will stream content to personal electronic devices including iPhones, iPads, Android phones and tablets.

The box will be preloaded with digital rights management (DRM) secured, licensed content, some of it HD, and including 50 movies and 15 each of 30- and 60-minute TV shows. Subsequent monthly updates on the ground – in the office, hanger or home – will add up to 15 additional movies per download, plus new TV shows, for a monthly fee. The SmartBox is carried onto the aircraft and PEDs connected via a one-time authentication.

Nicemedia works through Lufthansa's agreements with the major Hollywood studios, allowing it access to purchase content. This is compiled through the assistance of a content service aggregator, before Lufthansa makes it available to SD nicemedia subscribers.

Movies will be available in early window content, recently out of cinemas but not yet released on DVD, although



Venue is integral to
Bombardier's Global
cabin offering.

Credit: Rockwell Collins

it's worth noting that movies still in cinemas are rarely available in flight, even on commercial airlines. Nicemedia will, of course, also include late-window material, otherwise already available on DVD.

Sound Experience

Sound is a major component in a convincing movie experience and one that an aircraft cabin is not ideally suited to delivering. Predonescu explains: "Background noise and even structural vibrations are challenging factors in creating an optimal movie experience. Active noise-cancelling headsets and environments, and overhead sound, are the latest technologies enabling control of the best sound position in the cabin. Combined with audio software, these new technologies allow overhead sound to be dynamically focused or repositioned. We use these technologies to deliver the industry's most high-tech cabin experience."

Beyond sound and vision, integrating cabin management with IFE further optimises viewing conditions, as Predonescu

explains: "Inflight entertainment and cabin management system software harmonises cabin ambience and the movie experience. Dynamic lighting scenarios, dimming, window shades and audio technologies all combine to help create the best movie experience."

Chris Jameson describes Venue as a 'very customisable' complete CMS/IFE. "It has a feature called 'scenes' that enables a user to press one button to select the setting on several systems simultaneously. For example, a user can select a 'movie scene' that turns on the Blu-ray player, sets the audio to the cabin speakers, lowers the shades and sets the cabin lighting to the desired level and colour. Users can customise the themes and control them via side-edge-mounted touch screen switches, in-seat touch screen displays and their tablets or phones."

Future Experience?

Has IDAIR delivered the ultimate inflight movie experience? Predonescu responds: "We trust that we offer a state-of-the-art IFE/CMS experience,



but constantly look towards the future, considering new technologies that could help deliver the best experience possible for our customers.”

Jameson reckons: “The last decade has been incredible for the improvement of video in the aviation market. The advent of all-digital video distribution within the cabin has virtually eliminated the noise associated with analog distribution. The advancement of high-definition content and displays has also changed quickly, starting with 720i, to 720p, to 1080p and now 4K. The quality of LED backlit LCD monitors has also improved in resolution, contrast, brightness and viewing angle. The combination of these factors results in video quality that vastly surpasses that of 10 years ago.”

Looking into his high-definition crystal ball, he says: “The next 10 years will also be fascinating to watch. We can be sure that various implementations of organic light-emitting diode [OLED] displays will become mainstream within the home and aircraft cabin. Displays will continue to become much thinner as well.

“In particular, we should be asking: ‘How will flexible displays work out in the large-format screen arena? Where will transparent OLED displays be used? Will one of the new display technologies – micro LEDs, for example – replace OLED? Will 8K become the new standard?’.

“Although the improvements may well be less dramatic than they were in the previous 10 years, it’s certain video quality will continue to improve.” ■

Venue demonstrates its ability to feed multiple displays simultaneously.

Credit: Rockwell Collins

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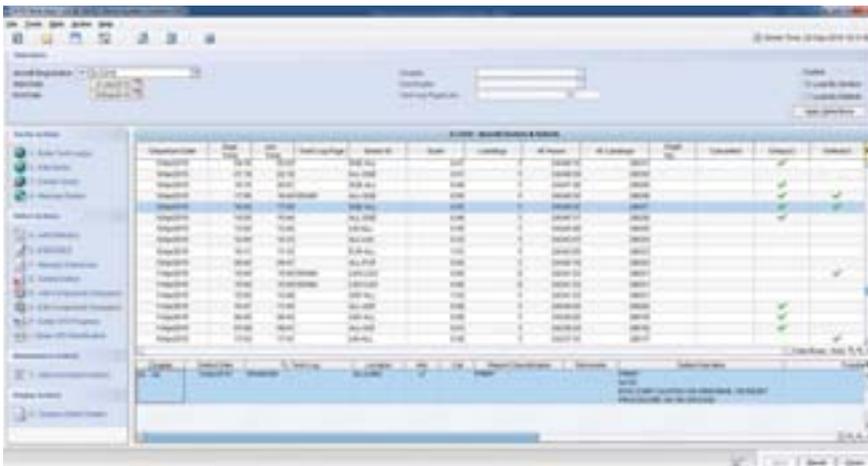
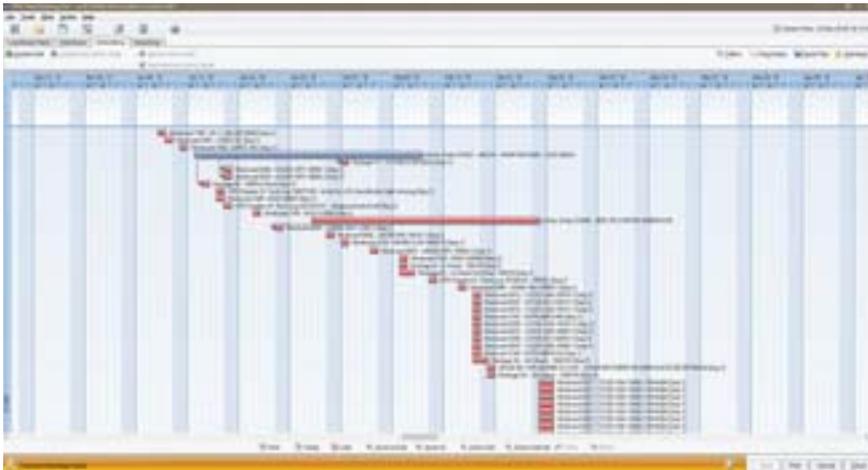
Rarely has a simple abbreviation encompassed so vast a discipline. Consider a complete 747-8 BBJ cabin refurbishment, a Citation tyre change, King Air deep service, IFE software update or an engineer hauling urgent parts to a grounded aircraft, all of them maintenance, repair and overhaul (MRO) procedures. The vast MRO industry that keeps business aviation 'flying fit' is founded on careful recording and monitoring, factors essential in ensuring the highest standards of safety, as well as helping maintain used aircraft values.

Headquartered in Peterborough, Ontario, family-owned Flying Colours is a model MRO with original expertise in Bombardier jets. In 2009, Flying Colours purchased JetCorp, establishing a US presence at St Louis and subsequently developing it into a thriving MRO, completions and avionics facility. The purchase enabled Flying Colours to increase its overall MRO and completion capacity, adding hangar space and specialist skilled workers – today the company boasts expertise in Beechcraft, Dassault, Embraer, Gulfstream and Bombardier models.

A Flying Colours spokesperson remarked: "Thanks to its impressive team, the facility has a strong reputation for maintenance and a growing name for completions/conversions, which it's ►►

Flying Colours offers MRO services for a variety of aircraft types.

Flying Colours



| OASES data presentation. Commsoft

underpinned with significant growth in the MRO business. The two locations now mirror each other in terms of capability and output, although only Peterborough offers paintwork.”

The Canadian MRO is also typical in expanding into Asia, although its extremely close relationship is perhaps a little less usual. Now employing more than 20 people, the operation sits within Bombardier’s Service Centre at Seletar Airport and offers interior refurbishment to complement the OEM’s on-site maintenance work.

It’s an interesting concept, as the Flying Colours spokesperson explains: “We offer a full range of interior services, including preliminary inspections, removals and installation, repairs, modifications and refurbishment work. The full-service interior offering complements Bombardier’s comprehensive line and heavy maintenance services for the complete Bombardier business aircraft product line.”

If Flying Colours’ global presence is growing, then Jet Aviation’s is burgeoning. The General Dynamics company offers large-cabin maintenance services in Basel, Dubai, Singapore and St Louis, with MRO for all jet types at several more bases in Africa, Asia, Europe, the Middle East and North America.

Company public relations and communications specialist Charles Bosworth explains the rationale behind the wide spread of facilities: “Jet Aviation’s service offerings include maintenance, completions and refurbishment, engineering, FBO and fuel services, aircraft management, charter and staffing. Geographically, our global operations support two broad regions: The Americas, and EMEA and Asia.

“We have an integrated ‘hub and spoke’ business service model, operating four major MRO hubs, located in St Louis, Missouri; Basel, Switzerland; Dubai, United Arab Emirates; and Singapore, all supported by other global maintenance facilities to meet regional demand. Our two completions centres are in Basel and St

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Louis, while we operate 20 FBOs around the world and manage a global fleet of approximately 300 aircraft.”

Keeping track

Accurate records are fundamental to safety oversight and regulatory compliance, and while a deft hand in MS Excel might suffice for a single-aircraft operation, specialist aviation engineering software packages exist to integrate, streamline and monitor processes. Among them, Commsoft’s Open Aviation Strategic Engineering System (OASES) has gained a solid foothold among the airlines and their supporting MROs, and is proving increasingly attractive to outfits specialising in bizjet maintenance – Commsoft currently has six such customers, a number Managing Director Nick Godwin expects to grow since OASES developments have focused on vastly improving its functionality for customers, including mobile applications.

He explains: “The basic principles of CAMO [continuous airworthiness management organisation] and MRO process control apply whatever an aircraft’s



role and OASES covers these equally. The corporate jet market is characterised by its much lower aircraft utilisation, typically 250-700 hours per annum for ‘flexjet’-type schemes, compared to 2,000-3,500 flying hours for airliners. As such, OASES, which tracks hours, cycles and calendar-based events in parallel, covers all aspects. The difference is that the operator is more likely to be using a LUMP [low utilisation

maintenance programme], which will have more emphasis on calendar-based checks.

“From the MRO side, the processes of gathering, monitoring and managing production data from the shop floor are the same. OASES has been extensively developed to meet the requirements of our various customers, including Harrods Aviation, to manage invoice generation and commercial management, and help develop future quotes. While the processes for corporate aviation MRO are similar to those of airline MRO, a system like OASES has to cater for a much greater range of ‘drop-in’ customers, requesting smaller packages of work or more varied diversity. Corporate MRO is therefore likely to have a larger range of customers from a wider registration base with smaller work content, all of which must be quoted clearly and invoiced promptly.

Beyond the benefits already described, Godwin says: “We find the corporate aviation market tends to use embedded systems, among them corporate aviation maintenance planning, which are included in the initial aircraft price as a service offering for the first one or two years. Offered as a managed service, the systems have benefits, but can lead to issues of

Jet Aviation operates a St Louis MRO facility.

Images Jerry Naunheim via Shutterstock





FLYING COLOURS' EXECLINER

Thanks in part to its close relationship with Bombardier, Flying Colours has developed an unusual MRO expertise with ex-airline CRJ airliners, which it modifies under its ExecLiner programme. "We've become specialists in converting CRJ200s to corporate shuttle or VIP format," the spokesperson says. "With more than 35 conversions complete, we've become real experts in the work. The ExecLiner's popular because owners can create an interior that matches their expectations, yet it remains competitively priced. Each conversion has its own unique set of requirements and we support the owner right from the very beginning in terms of finding the right aircraft and going through the pre-purchase inspection. In an ideal world this ensures good due diligence that stops us finding 'surprises' at a later stage.

"We also help the owner define the mission and talk with them about what's feasible in their time frame and budget, create the maintenance schedule that manages any overhaul, and begin the design process to create the interior as the client requests. We then go through installation, completion and delivery.

"The full process takes anywhere between four and ten months depending on the complexity of the interior, the state of the aircraft, modifications we have to make during the process and any last-minute changes. We can also manage future repairs, overhaul and touch-ups. Our capacity to perform interior and exterior maintenance in parallel reduces downtime, which is always a significant factor for the owner/operator." ●



Text weather data is available to all FlightDeck Freedom customers, while graphical weather is available to those with cockpit displays capable of displaying it
SCOTT HAMILTON

CAMO oversight. "CAMO organisations often use OASES to look after aircraft for several customers. Some of these will be controlled entirely in the software, while others will be monitored over and above the existing subscription service to give greater oversight. This is particularly true for Airworthiness Directives [ADs] and Service Bulletins [SBs], which must be very carefully monitored for each customer and, where SBs might have a cost with an economic or performance benefit, agreed with the customer.

"Our direct customer base has around 85 customers, looking after more than 120 aviation fleets. The customer can, subject to its contract with the CAMO, be given read-only or direct access to its maintenance website. OASES has many security controls and transaction logs, with auditing capabilities to control many such environments."

OASES is built around the basic principles of CAMO and MRO process control, which apply equally whatever the aircraft size or role. Several customers use OASES to monitor mixed fleets of jets, piston-powered fixed-wing aircraft and helicopters. Godwin says: "The technical principles are the same, but the differences may be economic. And although a smaller aircraft, with less to control, can be monitored in Excel or similar general software, such systems are usually not maintained adequately should someone leave an organisation, and data is not easily linked with other systems or functions. Increasingly, airworthiness authorities prefer a fully supported, professional system, backed by 24/7 support."

MRO split

Providers deliver targeted MRO for particular components, systems and

aircraft types, frequently depending on the size of their operation. Hangarage and runway capacities have particular effects on aircraft size and, inevitably, how a company splits its MRO capability.

How does Flying Colours divide its capacity? "Heavy checks are 50% of the workload at St Louis, where we're experts on the Bombardier Challenger and Learjet, and Dassault Falcon. Cabin refit and smaller maintenance jobs account for most of our remaining business there, while at Peterborough we offer about 60% cabin completions/modifications, paintwork and upgrades, and 40% maintenance work."

The Peterborough facility historically lacks runway and hangar capacity for aircraft significantly larger than the Bombardier CRJ, effectively excluding Flying Colours from ACJ and BBJ work. With both types in widespread service, is the company missing a significant share of the market? "Up until now we've not offered MRO services for the ACJ/BBJ. We're comfortable with the niche we're in, although we receive many customer requests for this narrow body work. We're now looking at expanding into the sector and working with the airport to expand our footprint at Peterborough, while looking at options in St Louis."

Beyond its fixed bases, Flying Colours is again typical among MROs in offering a reactive aircraft-on-ground (AOG) service. "We have a team of engineers that we dispatch to aircraft with technical issues anywhere in the world and regularly send them out from both facilities. We have monitored AOG support phone numbers and email addresses for all the aircraft types we work on."

Comprehensive records are an integral component of aircraft sales, depending on MRO providers to maintain and update records so that aircraft travel between clients with a fully traceable, accountable and transferable document chain. Missing links are usually costly to fill. A missing AD record, for example, can mean the work needs repeating.



OEM MRO

Bombardier supports its customers through independently managed Authorized Service Facilities (ASFs) that receive scheduled OEM audits to ensure they deliver the expected maintenance quality. Andy Nureddin, VP Customer Support and Training, Bombardier Business Aircraft explains: "Bombardier's ASF network, located in key regions including South Africa and the Middle East, complements its FAA Diamond Award-winning Service Centres worldwide. As the OEM, Bombardier knows its customers' aircraft best and has the expertise to provide industry-leading maintenance, repair and overhaul services at one of its 60 global facilities. We built the aircraft, so we know it inside out.

"Bombardier Service Centres have the OEM advantage of quicker access to the worldwide distribution network of parts, mobile repair units and field service representatives, which are available 24/7/365. In 2016, Bombardier invested greatly in its service network, adding two Customer Response Team trucks in the US, hiring 200 additional technical representatives and expanding its Service Centre capabilities across the network, with the addition of new facilities at Biggin Hill, UK and Tianjin, China.

"Bombardier supports its ASFs with full access to technical publications, technical training, advisory wires, service bulletins and the latest in FAA and Transport Canada regulations. In addition, Bombardier ASF technical representatives are provided with communications materials during customer advisories, on-site courses at Bombardier Service Centres and annual conferences, including an annual Maintenance and Operations conference.

"We also collect feedback, as well as in-service reliability and performance data to improve our products across the board. And we receive regular feedback from customer forums, including customer advisories and the Maintenance and Operations conferences. Our customers are at the heart of everything we do, which is why the customer service network is connected to all areas of the business, offering the highest quality of products and services.

"Finally, Bombardier provides its customers peace of mind through retrofit options and enhancement programmes that increase aircraft reliability and resale price." ●

Undercarriage units without scheduled overhaul documentation may need working again. Indeed, the financial burden can be such that an airframe becomes unsalable, or cannot be returned off lease without considerable investment.

Godwin summarises: “Any aircraft that’s been professionally controlled and has extensive documentation, backed by reports and audit logs in a system like OASES, will have a higher resale value and be more marketable. When an aircraft is returned or re-delivered to a lessor – a situation prevalent for many years in the airline world and a growing market sector in corporate aviation – the documentation must be accurate. Without it, major costs or penalties can be incurred as highly paid specialists wrestle to determine the aircraft’s true airworthiness state.”

The far-reaching benefits of maintenance software now being realised within bizjet MRO are among several developments changing the industry. Over the last decade, it has grown around routine inspection and upgrade, work Flying Colours describes as: “Very methodical, routine and task orientated.” Now, “Task orientation will continue, but technology has been enhanced and this will help reduce maintenance intervals. When you combine this



Up until now we’ve not offered MRO services for the ACJ/BBJ. We’re comfortable with the niche we’re in, although we receive many customer requests for this narrowbody work

FLYING COLOURS SPOKESPERSON

with connectivity capabilities, and improvements in next-gen avionics, it will modernise the MRO business as it becomes more sophisticated.”

Godwin also sees the influence of connectivity, and says it’s already having an effect: “OASES has been extensively connected with various operations systems for airline and corporate use, although corporate operators tend to view operations data in isolation. It’s being successfully fed with engineering data from Class 1, portable electronic technical log devices from the flight deck and these devices can also be programmed to receive information related to scheduled maintenance events.

“We’re also developing a range of applications for use on mobile devices. The first deployed enables pilots to access a forecast for maintenance events from their CAMO customer’s system. These systems are already in use and more will be deployed in response to customer demand.” ■

Flying Colours’ Peterborough hangar.
Flying Colours



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Burning & Turning in 2017

Business jet and
turboprop developments ▶▶

While Dassault's Falcon 8X is winning plaudits, issues with the Safran Silvercrest engine have delayed the Falcon 5X, shown here. *Dassault*



An Airbus-developed ACJ350 office concept. ACJ

From continued product improvement, through flight testing, certification, first delivery and new product development, 2017 promises to be an interesting year for business jets and turboprops. While Airbus and Boeing work on their latest models, based on the new generation of fuel efficient, re-engined A320neo and 737 MAX airframes, Bombardier is flight testing the radical Global 7000 and Gulfstream is preparing to deliver its first G500 even as the G600 test programme continues.

Meanwhile, Cessna is pushing on with the Citations Latitude and Longitude, while making progress on its Denali turboprop, Piper is focused on M-class product development and Pilatus just flew its third PC-24 prototype as it works on the rugged jet-powered stablemate to its best selling PC-12 NG turboprop.

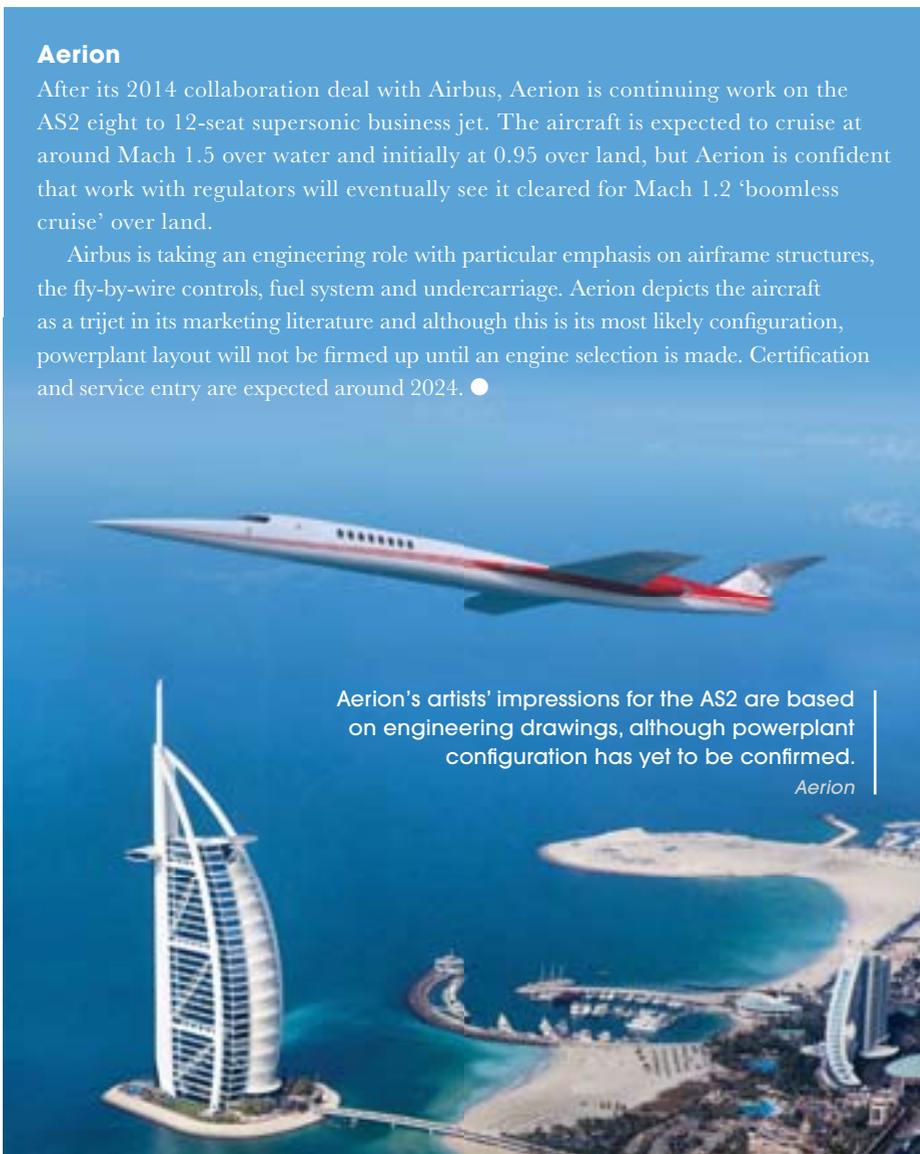
Airbus Corporate Jets

At ACJ, the primary focus is on delivering the first green ACJ320neo towards the end of next year. In the meantime, the manufacturer has released its Melody cabin concept for the aircraft, elements of which could be incorporated into new-build ACJ320 jets should a customer desire.

Aerion

After its 2014 collaboration deal with Airbus, Aerion is continuing work on the AS2 eight to 12-seat supersonic business jet. The aircraft is expected to cruise at around Mach 1.5 over water and initially at 0.95 over land, but Aerion is confident that work with regulators will eventually see it cleared for Mach 1.2 'boomless cruise' over land.

Airbus is taking an engineering role with particular emphasis on airframe structures, the fly-by-wire controls, fuel system and undercarriage. Aerion depicts the aircraft as a trijet in its marketing literature and although this is its most likely configuration, powerplant layout will not be firmed up until an engine selection is made. Certification and service entry are expected around 2024. ●



Aerion's artists' impressions for the AS2 are based on engineering drawings, although powerplant configuration has yet to be confirmed.

Aerion

Already in service on the A320neo airliner, the ACJ320neo offers the choice of Pratt & Whitney PW1100G or CFM International Leap-1A engines. Work is also ongoing to offer the shorter ACJ319neo. Airbus' other new-generation airliner, the A350 XWB is already impressing passengers in airline service and the OEM reports strong interest in the ACJ350 version, scheduled for first delivery in 2019. Boasting a 22-hour endurance with 25 passengers and their baggage, the jet enables what Airbus calls 'non-stop to the world' range.

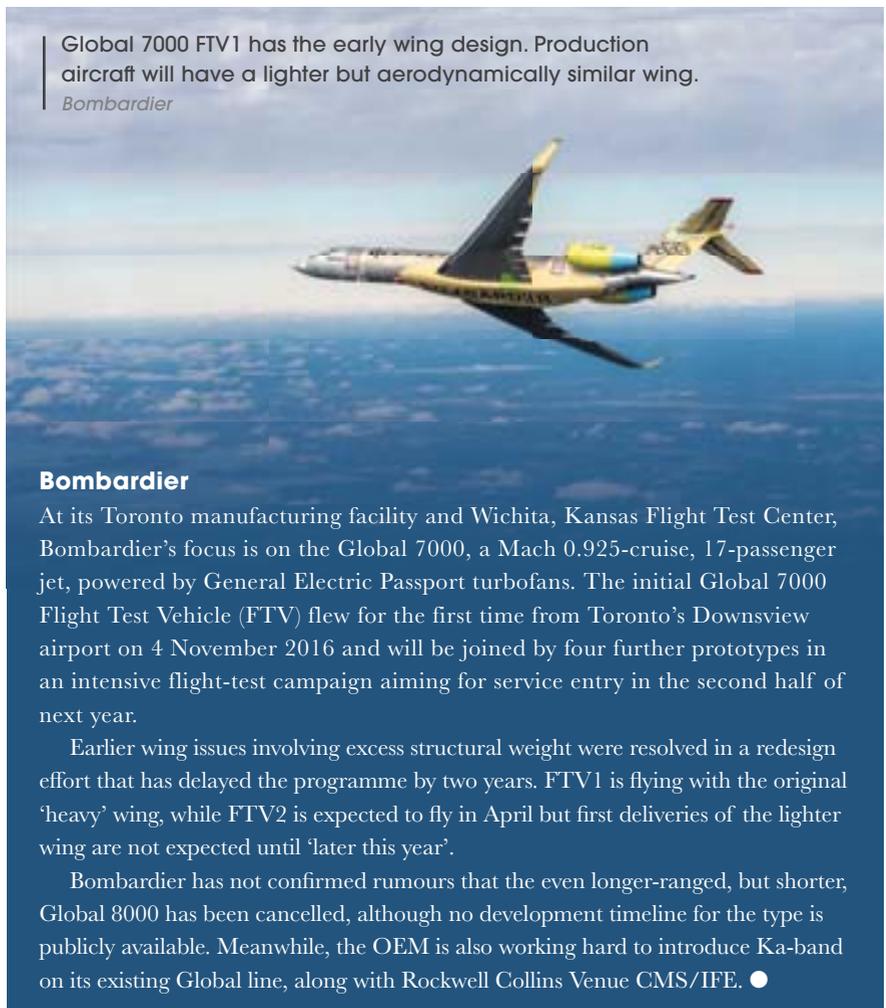
Boeing Business Jets

On 9 March, Boeing announced the award of FAA certification for its 737 MAX 8 airliner, paving the way for first deliveries in the coming months. It also brought the new line of Leap-1B engine BBJs (below) closer to reality. Boeing plans to replace the 737-800 based BBJ2 with the MAX 8 and the 737-900 based BBJ3 with the MAX 9. Smallest and longest-ranged of the family, the MAX 7 was announced at last year's Farnborough International Airshow as replacement for the original BBJ, also known as the BBJ1.



Compared to the BBJ1, the MAX 7 is 6ft 4in (1.93m) longer, expanding cabin space and making way for two additional fuel tanks. Combined with the latest aerodynamic developments and frugal Leap-1B, the extra fuel gives the jet a 7,000nm range with eight passengers, sufficient for Dubai-New York.

Customers must wait until 2018 for the MAX 8 to become available, 2020 for the MAX 9 and another two years for the first MAX 7. Boeing also notes steady interest in the 777, 787 and 747-8 BBJs.



Global 7000 FTV1 has the early wing design. Production aircraft will have a lighter but aerodynamically similar wing.
Bombardier

Bombardier

At its Toronto manufacturing facility and Wichita, Kansas Flight Test Center, Bombardier's focus is on the Global 7000, a Mach 0.925-cruise, 17-passenger jet, powered by General Electric Passport turbofans. The initial Global 7000 Flight Test Vehicle (FTV) flew for the first time from Toronto's Downsview airport on 4 November 2016 and will be joined by four further prototypes in an intensive flight-test campaign aiming for service entry in the second half of next year.

Earlier wing issues involving excess structural weight were resolved in a redesign effort that has delayed the programme by two years. FTV1 is flying with the original 'heavy' wing, while FTV2 is expected to fly in April but first deliveries of the lighter wing are not expected until 'later this year'.

Bombardier has not confirmed rumours that the even longer-ranged, but shorter, Global 8000 has been cancelled, although no development timeline for the type is publicly available. Meanwhile, the OEM is also working hard to introduce Ka-band on its existing Global line, along with Rockwell Collins Venue CMS/IFE. ●

Cessna

In celebratory mood, Cessna marked the 45th anniversary of the first Citation delivery in January. Development and testing of the Citation Longitude super-midsize jet, the latest in a long line of models since, is due for imminent completion, followed by anticipated certification by the end of the year. Work also continues to gain international certifications for the Citation Latitude.

Design and development work on the high-performance Denali single-engined turboprop is also continuing, with the aircraft's General Electric Advanced Turboprop (ATP) engine running for the first time. Carrying a maximum of 11 occupants, the Denali will offer a 1,600nm range with a pilot and four passengers on board.

Daher

On 30 January, Daher announced first delivery of its Model Year 2017 TBM 930 turboprop. Features new for the model include a redesigned cabin with new seat cushions, headrests and armrests. The seat fairings are now covered in Ultraleather synthetic fabric for increased longevity. Customers choose between Black Diamond, Beige Luxor and Agate Grey cabin 'harmonies', with brushed aluminium fittings for the main door stair, handrail, pilot door and rear seat side beam as standard; a polished finish is available as an option.

The cabin temperature controls are now backlit and high-power USB charging ports are installed to left and right. All Model Year 2017 TBM 930 and TBM 900 aircraft



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are also configured to accommodate the Elite Privacy enclosure, a quick-change option that integrates a lavatory in the aft fuselage. It serves as a bench-type seat with a low divider wall when not in use, but converts to a fully private toilet compartment at the touch of a button.

In the cockpit, Garmin's GTX 345 transponder is new. Configured for Automatic Dependent Surveillance-Broadcast In (ADS-B In) compatibility, the equipment enables aircraft in US airspace to receive traffic and weather information.

Previous options that are now included as standard on the 2017 model include a stick-shaker linked to the aircraft's under speed protection system and the Flight Stream 210 gateway, enabling wireless connectivity for two mobile devices running the Garmin Pilot app. A new digital hour meter for flight time tracking and three high-power USB charging ports are also added to the cockpit.

Dassault

Vadim Feldzer, Head of Falcon Global Communications, reports that after gaining certification at the end of last year, Dassault's Falcon 8X flagship is being delivered to customers worldwide and receiving very positive reports for its performance and cabin comfort. After visiting Bangalore for Aero India 2017 between 14 and 18 February, the aircraft made its Australian debut at Avalon on the 28th.

Feldzer also says: "The Falcon 5X should go back to flight testing later in the year once we've received a new engine shipset."



EMBRAER has incorporated standard auto-throttle and SVS into the Legacy 650E avionics package. EMBRAER

EMBRAER

With its Phenom 300 the most delivered bizjet for the fourth year running in 2016 and the Legacy 450/500 earning plaudits, EMBRAER is on a roll. Key developments for 2017 include the Phenom 100 EV, E2VS for the Legacy 450/500, and Legacy 650E.

According to the manufacturer, the Legacy 650E optimises the design characteristics of the super-midsize Legacy 600 with the range of the large-cabin Legacy 650, adding new-generation avionics upgrades and a 10-year, 10,000-hour systems and components warranty, for the Legacy 600's US\$25.9-million list price. The aircraft includes an upgraded Primus Elite Advanced Features avionics suite offering synthetic vision and auto-throttle as standard – auto-throttle will also be available by retrofit from first quarter 2018.

Primus Elite Advanced Features also replaces the Legacy 650's cathode ray tube primary flight displays with liquid

crystal displays and includes provision for two Apple iPad electronic flight bags. The Legacy 650E will enter service in the first quarter of this year.

Last September, the FAA granted certification to EMBRAER's Enhanced Vision System, or E2VS. The equipment combines enhanced vision system (EVS) and synthetic vision system (SVS) into the primary flight display and HUD of the Legacy 450/500. First installations were accomplished towards the end of the year and the manufacturer is rolling E2VS out across its Legacy output in 2017.

EMBRAER introduced the market to the upgraded Phenom 100 EV in July 2016 and aims to deliver the first aircraft this year. With more than 340 Phenom 100s in service, the Phenom 100 EV features more powerful Pratt & Whitney Canada PW617F1-E engines, sufficient for a high-speed cruise threshold of 405kt at FL330. Full-fuel payload is increased to 645lb and flight time to initial cruise altitude shortened to 19 minutes, 20% faster than

Cessna is continuing its efforts to gain international certifications for the Citation Latitude.

Cessna



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Initial production G500s should reach customers this year.

Gulfstream

for the previous model. The Phenom 100's already impressive hot-and-high performance is also improved.

The aircraft's Prodigy Touch flight deck is based on Garmin's G3000 avionics suite. It includes SVS and introduces three 14.1in high-resolution touch-screen displays. A new weather radar is also available to Phenom 100 EV customers, plus a standard system providing vertical navigation guidance during climb, cruise and descent.

EMBRAER has augmented the Phenom 100's ice detection and deicing system with an automatic alert for ice accretion. The SurfaceWatch runway incursion alert system and reactive wind shear alerting are available, as well as a new brake control unit that improves lateral controllability.

Finally, passenger comfort is improved

in the redesigned cabin, which features a straight-line main aisle and relocated power outlets offering USB charging and providing more space.

Gulfstream

Gulfstream first flew the G500 in 2015 and anticipates receipt of FAA type certification this year, followed by first customer deliveries. Capable of covering 5,000nm with eight passengers, the G500 will cruise at Mach 0.85 and reach a maximum altitude of 51,000ft.

Alongside G500 certification, the G600 flight-test programme will continue throughout 2017. The aircraft first flew late last year and FAA certification is anticipated in 2018, followed by initial deliveries.

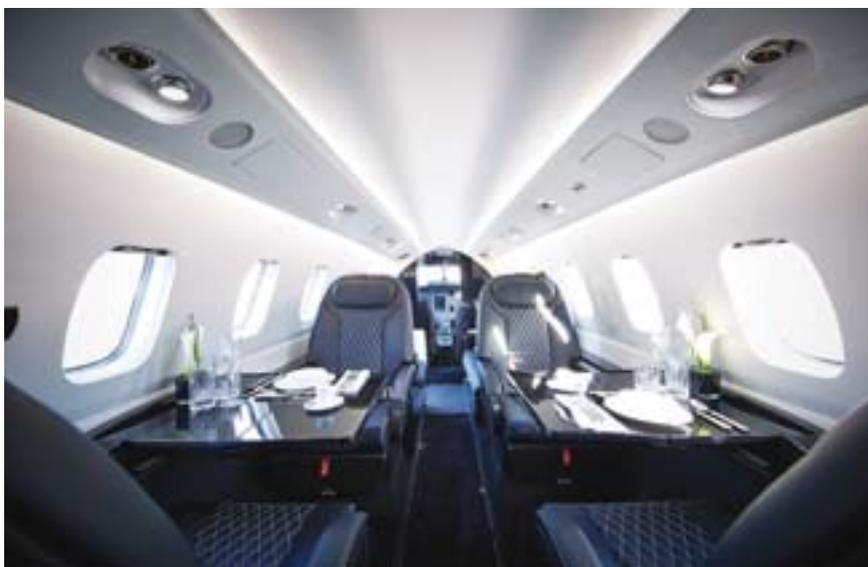
Although it has new aircraft programmes running in parallel, Gulfstream has not forgotten its in-service

legacy fleet. It recently received a supplemental type certificate for ADS-B v.2 for the GIV, completing the system's availability across the Gulfstream range. According to the company's Director, Corporate Communications Heidi Fedak, the move marks Gulfstream out as: "... one of the first original equipment manufacturers to offer ADS-B Out for its full fleet of aircraft."

The OEM is also offering Jet ConneX as a completion option and for retrofit this year.

HondaJet

Marketing efforts for the unusually configured HondaJet continue in 2017, initially with the aircraft's first appearance in China, at the Asian Business Aviation Conference and Exhibition at Shanghai, between 11 and 13 April.



Piaggio

With its latest Avanti EVO model gaining increasing traction in the US market and recently made available for charter in the UK, Piaggio is seeing renewed interest in the type. The new variant is quieter than its Avanti II predecessor, aerodynamically refined and introduces five-bladed scimitar propellers for its Pratt & Whitney Canada PT6 engines. ●

Passengers particularly appreciate the Avanti EVO's quiet, spacious cabin.

©Paul Cordwell/Piaggio Aerospace



Pilatus flew its final PC-24 prototype for the first time on 6 March. *Pilatus*

Pilatus

On 6 March, Pilatus flew the third and final prototype of its PC-24, which it's dubbing the Super Versatile Jet. The two-hour five-minute sortie saw the series-standard aircraft join the first two prototypes in the test programme and Pilatus reported they had flown 1,350 hours to date. The latest aircraft will perform the type's certification flying, towards a milestone expected to be reached in fourth quarter this year. Pilatus says initial deliveries from its 84-aircraft order book will go ahead immediately after certification.

Pilatus is also seeing burgeoning success with its rugged PC-12 NG turboprop – global sales were up 20% in 2016. Pilatus notes: "We expect to deliver the 1,500th PC-12 in mid-2017, and the worldwide fleet of PC-12 aircraft will surpass the 6 million-hour milestone about the same time." ●



Power for Piper's M500 comes from a PT6A-42A turboprop. *Piper*

Piper

Piper is tight-lipped about its plans for the M500 and M600 turboprops, but Jackie Carlon, Director of Marketing & Communications reveals: "We have a product development strategy for each of our M-class models that will enable us to provide the market and our customers with innovative and meaningful products." ●



Sukhoi's SBJ is based on the SSJ100 regional airliner. *Sukhoi*

Sukhoi

In summer 2016, two Sukhoi Business Jets (SBJs) were delivered to the Royal Thai Air Force (RTAF) for governmental and military commander transport as the first SBJs ordered by a non-Russian customer. The RTAF signed for a third jet in December. By early 2017, nine SBJs were in service. ●

SyberJet

Still the world's fastest, longest ranged light jet, the SyberJet SJ30 uniquely offers a sea level cabin altitude to 41,000ft. Mark Fairchild, General Manager & Director of Sales/ Customer Service at SyberJet, says: "We're finishing work on a new cockpit we call SyberVision, incorporating Honeywell's Epic 2.0 avionics into the certified SJ30. We're expecting to fly our flight test aircraft later this year, beginning the certification process that will enable us to begin delivering the upgraded SJ30i in 2018.

"SyberVision features four 12in LCDs and standard SmartView SVS, INAVTM moving map display system, electronic charts/maps, TCAS II, TAWS Level A, synoptic displays, dual FMS with dual WAAS GPS/LPV, single INS, on-board weather radar, full EICAS, electronic checklists, DME, ADS-B Out, and 0.3nm RNP, as well as support for FANS-1A, SmartLanding, SmartRunway, TOLD, ADS-B In, emergency descent mode, and RVSM operations. Options include CPDLC, XM weather, flight data recorder, cockpit voice recorder, dual charts/maps, HF radio, satcom and EVS.

"The SJ30i will also have a new cabin layout with an all new, forward-facing belttable potty seat and sixth window. Its more aggressive styling includes carbon fibre and brushed aluminium, while other high-end automotive finishes will also be available." ■

Brand new styling will revitalise the SJ30i cabin from 2018. *SyberJet*





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