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**High Net
Worth Profile:**
The Accidental Astronaut
Barbara Barrett

EXECUTIVE AND VIP AVIATION INTERNATIONAL

WINTER 2016

Republic of San Marino

Marco Conti, Director General, Civil Aviation Authority
David Colindres, President, San Marino Aircraft Registry



Company profiles include: JSSI; down-route; Bombardier; Zetta Jet; F/LIST
UAS International Trip Support; Satcom Direct; Meridian; Jetcraft; Click Aviation Network

Special feature: Rick Adams on Upset Prevention and Recovery Training

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first thought

What a difference a few weeks makes! EVA's NBAA and MEBAE editions tend to follow hard each on the other's heels due to the proximity of the two shows. However, when I penned the editorial for NBAA the US presidential elections were still in TV debate mode and Hillary Clinton looked like a racing certainty. Which just goes to show, don't bet your mortgage on a racing certainty or you could wind up on a park bench.

At the time of writing the President-elect, Donald Trump, was busy amusing himself by giving apoplexy to the UK Prime Minister with the suggestion that it would be a jolly idea to make Nigel Farage - easily one of the people Theresa May most despises - the UK's 'man in Washington'.

We're clearly now in uncharted territory and the future promises to be interesting. For business aviation, the most positive sign of President-elect Trump's victory is the bout of Trump delirium sweeping through global stock markets, propelling them to new highs (though the markets are so twitchy that this could reverse before we come out in print).

Hopefully, though, for all his shoot-from-the-hip-and-damn-the-consequences philosophy, a Trump Presidency will end up being good for business. God knows business aviation could use a break!

This is easily our biggest MEBAE edition ever, so I'll simply point you to the contents page to see what we have in store for you this go-round. As usual, EVA will be hosting the 'best ever' after-party at MEBAE. However, we are tight on numbers so it really will be first come first served. Contact Max or the EVA stand to see if there are still tickets going.

Have a great show, everyone, and all the best for the Festive Season.

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Registering SUCCESS

San Marino, or more officially, the Serenissima Repubblica di San Marino, is a tiny microstate wholly surrounded by Italy. It is located on the north-eastern side of the Apennine Mountains and covers just 24 square miles, which makes it Europe's third-smallest state, after the Vatican and Monaco.

It has the smallest population of all the members of the Council of Europe, but has the distinction of being – or claiming to be – the oldest surviving sovereign state and constitutional republic on the face of the planet. It traces its origins all the way back to a monastic community founded on 3 September 301 AD, by the stonemason Marinus of Arbe.

In 2007, meanwhile, 1,706 years after the establishment of the Republic, Jorge Colindres, Founder and Chairman of Aviation Registry Group (ARG) and CEO of The Registry of Aruba (headquartered in Miami, Florida) embarked on a journey with his son David Colindres to expand its exclusive aircraft registry business model.

In September 14, 2012, after a series of meetings between ARG executives and San Marino government officials, San Marino Civil Aviation Authority executive Ing. Marco Conti (Director

General) and Jorge Colindres (ARG Chairman), agreed to secure a long-term contract. Subsequently the ARG Board of Directors appointed David Colindres as President of the San Marino Aircraft Registry to work in partnership with ex-Head of State and current Director General of Civil Aviation, Ing. Marco Conti.

“Our agreement with ARG allowed the Republic to develop its aviation activities and increase the Aircraft Registry, whilst maintaining an excellent client service with full compliance with ICAO standards,” Conti says, commenting on the arrangement.

“Our main objective was to locate a State with an impeccable international reputation. The Republic of San Marino, with its interesting history and exciting traditions, met that requirement and was then chosen as the ideal location for the development of the next ultimate aircraft registry,” comments David Colindres.

In December 2012 at the MEBAA Show in Dubai, SMAR and the CAA launched the San Marino Aircraft Registry to foreign aircraft owners operating private aeroplanes, corporate jets and turbine helicopters. Twelve months later, SMAR became the first European

based Aircraft Registry to open its doors to private and commercial air transportation operations following the high demand of airlines and business jet charter operators.

Since then there has been a high demand for operators wanting an AOC to offer its clientele the option to commercially operate the aircraft worldwide. In the four years since the Registry was launched, David Colindres has witnessed an increase in Private Jet owners, including WVIP, wishing to pursue an AOC in order to offset their operating costs.

An applicant that wishes to operate an aircraft for the purpose of Commercial Air Transport must obtain an Air Operator Certificate (AOC) from the CAA and have their principal place of business in San Marino where the principal financial functions and operational control of the activities are exercised. As of today, the CAA has certified and granted seven (7) Air Operator Certificates (AOCs). In support of our commercial operations and as member of European Civil Aviation Conference (ECAC) Effective from 17 August 2016 the Republic of San Marino is a party to the Multilateral Agreement on Commercial Rights of Non-Scheduled



EVA talks to Marco Conti, Director General of the state's Civil Aviation Authority (CAA) and David Colindres, President of San Marino Aircraft Registry (SMAR)

Air Services in Europe, signed in Paris on 1956.

Alternately, applicants can choose to operate commercially under a foreign AOC utilizing an ICAO Article 83bis agreement. Today, the CAA has signed an ICAO Article 83bis agreement with the Republic of Lebanon, Kingdom of Saudi Arabia and Nigeria. In Lebanon, the national carrier Middle East Airlines (MEA) has six (6) A320s and two (2) more business jet operators. In the Kingdom of Saudi Arabia, there are three (3) business jet operators with seven (7) aircraft and in Nigeria there is one (1) business jet with a fleet of six (6) aircraft.

Colindres is happy to point out that for the past four years the San Marino Government and its people have been the finest hosts possible. "The Ministry of Transport, headed by Minister Marco Arzilli, and the CAA Director General Ing. Marco Conti, have embraced the project and given full support to the aircraft registry to ensure its success. This is just the beginning of a great journey. Unity is strength... when there is teamwork and collaboration, wonderful things can be achieved," he comments.

For his part, Conti point out that our strategic partnerships have proven to be highly effective

way to build the business. Just this year we have achieved 74 new aircraft registrations up to the third quarter of 2016. I feel pride and honor for San Marino to be chosen by owners and aircraft operators for our high standards and service. The biggest growth in registrations in recent years has come from Middle East, Commonwealth of Independent States (CIS) as well as Africa although there is an increasing interest from Asia and Australia. Our commitment is to remain the best option for aircraft operators/owners for the next 100 years.

While there are similarities between the other registries and the San Marino Aircraft Registry, Colindres explains that there was a whole new drive and dimension behind the establishment of the new registry. "To compete in an international arena, SMAR developed the idea of differentiating our product and service from the existing aircraft registries by using a creative approach to provide a better service. For example, SMAR pioneered aircraft registration by foreign owners using a local domicile representative, whilst the CAA ensured operators had access to necessary guidance material and reactive administration.

"Tax efficiency is an important driver in the

decisions of owners and operators when considering where to register their aircraft. All aircraft registered in San Marino are exempt from VAT and import tax, provided the foreign citizen or company owns the aircraft," he points out.

Moreover, SMAR offers corporate jet aircraft owners the freedom to choose a jurisdiction of choice when structuring ownership and operation, without the need to incorporate a new San Marino company. A streamlined and innovative legal framework was created to allow foreign individuals and foreign companies to qualify for registration of their own aircraft once they have elected a representative residing in the Republic of San Marino. The Registry can assist with the nomination of this representative who will act as an address for service – with their only responsibility being to transmit to the owner any relevant official notices and notifications from the CAA.

Registration by domicile allows a smoother and speedier transition to T7 registration, offers more cost-effective fees and contributes greatly in creating a streamlined and very simple, straightforward registration process. Registration can be accomplished in one to three business days following the satisfactory airworthiness inspection ►

► of the aircraft and documentation.

"This was a great innovation that transformed the way we register aircraft," says Conti.

The San Marino Aircraft Registry was founded with a clear concept of quality and service. Since its inception, it has focused on becoming the best in all areas of the business. In addition, the CAA's regulatory responsibilities have been recognised with the ICAO Council President's Certificate for exemplary commitments and progress on aviation safety during the 2016 opening ceremony at ICAO's headquarters in Montreal. Following an ICAO Universal Safety Oversight Audit Programme (USOAP) Continuous Monitoring Approach (CMA) audit of the San Marino CAA, carried out from 29 June to 6 July 2015, the CAA is proud to note that with respect to the effective implementation by area for eight critical elements, it achieved an above global average as one of the top 20 compliant CAAs.

ICAO representatives at the time stated: "The professionalism and enthusiasm of all personnel who interacted with the audit team contributed greatly to the success of the audit mission." An owner, operator or lessor can be confident that the regulations, documentation and processes comply with the highest international standards.

"Our achievement here really gives global credibility to the CAA of San Marino as an international focus for registering business and commercial aircraft," Colindres says.

The CAA and its registry is becoming recognised for its pragmatic approach in civil aviation safety, compliance, customised solutions and customer service.

Colindres adds: "In today's world, privacy and security are fundamental to the safety of our clientele. In San Marino the name of the company in which the aircraft is registered only appears on the certificate of registration. However, this information is not publicly available on the San Marino Civil Aviation website. The Registry specialises in VIP aircraft registration services,

providing confidentiality, a neutral profile registration mark and political stability."

The San Marino CAA and its registry are delighted to have been able to obtain a successful position in a competitive market in such a short period of time, becoming a leading jurisdiction for aircraft owners, lessors and operators. "Basically it is the professionalism and work ethic of



President of the ICAO Council Dr Olumuyiwa Benard Aliu presenting San Marino CAA Director General Ing. Marco Conti with the President's Certificate for exemplary commitments and progress on aviation safety

the CAA with the assistance of very dedicated and experienced Registry personnel. The CAA consists of a group of professionals and experienced regulators, aviation consultants, registration and licensing officers that focus on the regulatory and safety requirements, who work hand in hand with a registry that understands the different needs that aircraft owners, operators or lessors expect," Colindres notes.

The San Marino CAA is a signatory to the Cape Town Convention that protects owners' assets, rights and interests. The Cape Town Convention is intended to give parties involved in such transactions greater confidence and predictability, principally through the establishment of a uniform set of rules guiding the constitution, protection, prioritisation and enforcement of certain rights in aircraft and aircraft engines. The Registry offers all this and more through its innovative approach to client requirements.

"Our latest innovative move was to develop and implement legislation, procedures, policies and regulations for Remotely Piloted Aircraft System (RPAS) operations regulations which came into effect from May 2016," Colindres says.

The CAA approach to internationally recognised standards and a Type Certificate (TC) and the associated Type Certificate Data Sheets (TCDS) issued by the Federal Aviation Administration (FAA) of the United States, Transport Canada, or the European Aviation Safety Agency (EASA) would be acceptable to the CAA. In the matter of STCs (Supplemental Type Certificates) embodied on an aircraft, the CAA will accept without further review any STC that has been previously approved by the above national aviation authorities when the CAA first issues the aircraft with a Certificate of Airworthiness (CofA).

The high standards of service on which San Marino prides itself are underpinned in large measure by the deep experience of former UK CAA, Australian CASA, EASA, FAA and senior regulators and inspectors. "All our senior regulators and technical experts bring an average of 20 years or more of experience at working with the world's renowned CAAs. Our senior regulators are experts in civil aviation regulations, compliance and safety management, all of which improve the safety performance of our operators," says Conti.

He makes a point of not bringing anyone into the technical side of the business who is not able ►►



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.

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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 Junker, German Chancellor Angela Merkel and many others.

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▶ to demonstrate at least a 20-year track record in a previous civil aviation authority. "We do not take someone, for example, who may be a very good engineer, but who has no regulatory experience. It is deep regulatory knowledge that we insist on first and foremost," he emphasises.

The whole point is to ensure that CAA regulators and inspectors act according to CAA procedures, policies and regulations when it comes to recommending approvals and certifications for aircraft. "We aim to provide a top quality regulatory service and we look to provide guidance to every single operator on the Registry," Conti observes. Inspectors always travel to the customer's preferred site for the aircraft that is being examined.

Colindres points out that switching the registration to San Marino is a very straightforward affair and can be done with minimal ground time. "If it is a brand new aircraft, we send the inspectors direct to the OEM. We have very close ties with the OEMs and we have a number of Boeing, Airbus, Cessna, Gulfstream, Bombardier and Dassault aircraft on the Registry.

"Our corporate objectives are to meet and surpass client expectations and to ensure their complete satisfaction as they get their T7 registered aircraft flying," he notes.

An added value to the Registry is the CAA's utilisation of designated and highly experienced flight operation inspectors and airworthiness inspectors. The CAA has inspectors able to cover North and South America, Africa, Europe, Middle East, Asia and Australia.

The San Marino CAA recognises mainte-



nance organisations appropriately approved by EASA, FAA, UAE GCAA and Singapore CAAS as meeting the equivalent standards of CAR 145 regulations within the scope of work as stated in their approval. These organisations can perform maintenance on T7 registered aircraft without requiring formal approval, allowing aircraft owners and operators to select from a greater selection of, or more conveniently located, maintenance organisations.

"Word of mouth is a great source of new business opportunities for us and we are growing strongly through recommendations from our existing client base," Colindres comments.

One of the challenges for any well-run organisation is ensuring that quality is maintained and the bar is moved ever higher. Conti says he is confident that San Marino has

a very strong quality control system in place, supported by regular internal and external audit checks. "We have a team of ex-ICAO, EASA, UKCAA and FAA senior regulators and inspectors that we invite in every six months to audit our processes, procedures, policies and regulations. The CAA has a functioning State Safety Program and the CAA is also constantly updating and upgrading our publications and regulations," he comments.

Conti adds that one of the most important publications for the Registry is Civil Aviation Publication (CAP) 01 on the aircraft registration process. "If you need to know how to proceed with the registration of a particular aircraft, this is the definitive document on how to move forward. Like all CAA publications and regulations it is available on the CAA and Registry website (www.smar.aero). It was created on 20 December 2012 and to date there have already been nine revisions of the publication. This is an example of the continuous updating that we undertake in order to take account of emerging international best practice and all the legislative changes," he notes.

One of the most necessary things to do as a manager is to ensure that you are constantly up to date with the latest standards and industry best practice. The San Marino CAA and its Registry continues to be more innovative, competitive and focused to offer its clients the highest level of service and support for its clients' operation from day one.

The Registry invites you to experience the San Marino difference. ■



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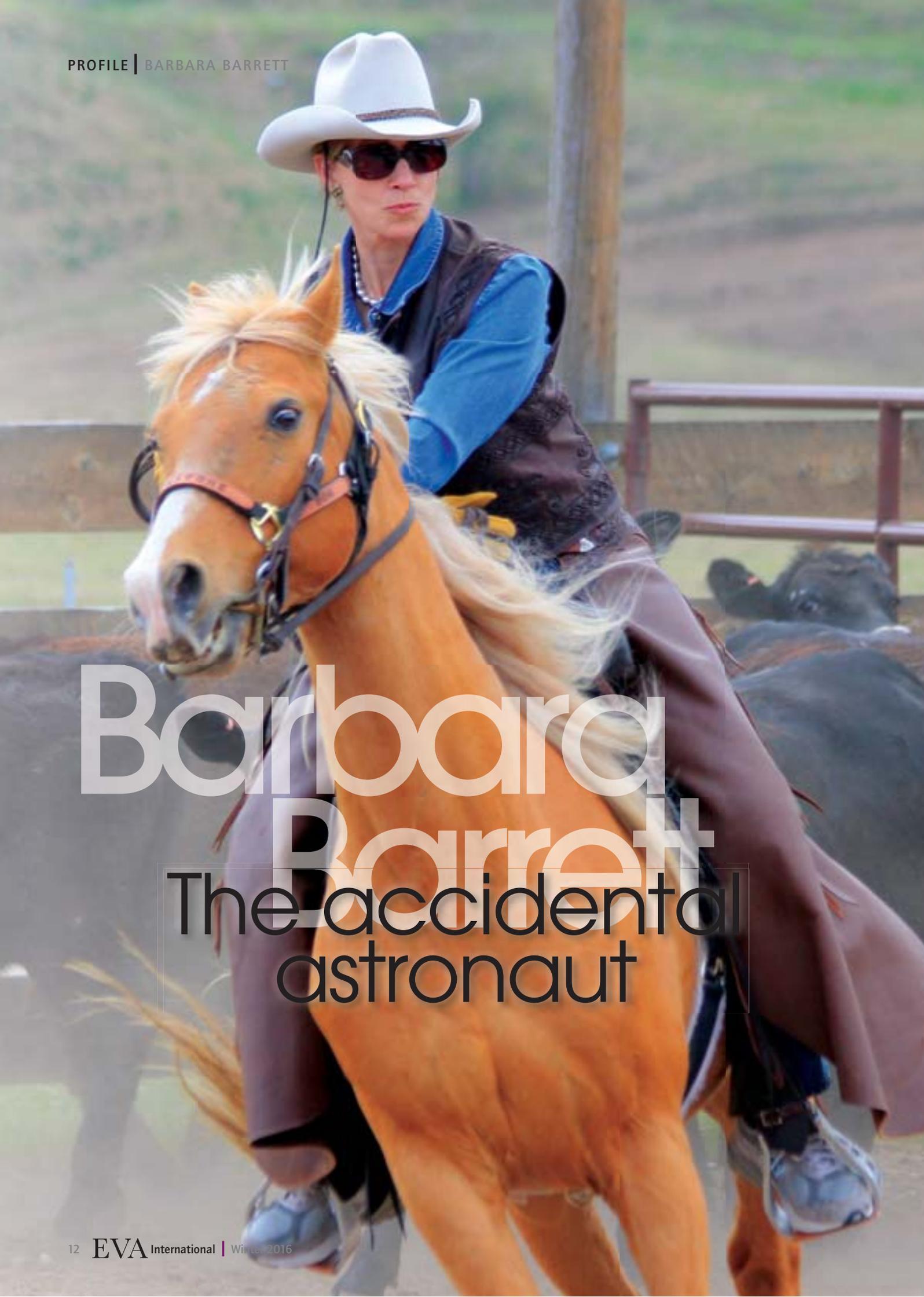


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Barbara Barrett

The accidental
astronaut



Barbara Barrett, former US Ambassador to Finland, is a trained astronaut and has served as an advisor to five American presidents on trade and defence policy. An executive of two Fortune 500 companies, she has served on 10 corporate and more than 50 non-profit boards, was Vice Chairman of the United States Civil Aeronautics Board, Deputy Administrator of the FAA (Federal Aviation Administration) and a partner in a Phoenix, Arizona law firm. She has taught leadership at Harvard's John F Kennedy School of Government and was a candidate for the Governor of Arizona. Presently, Barrett is Chairman of the Board of Aerospace Corporation, serves on the Smithsonian Board of Regents and the board of the RAND Corporation. She travels by private jet most frequently for business but also with her husband Craig Barrett, retired Chairman and CEO of Intel. They frequently fly from their home in Paradise Valley near Phoenix, Arizona, to the Montana Rockies, where the Barretts own the award-winning luxury resort, Triple Creek Ranch.



Barbara Barrett was born on a farm in Indiana County, Pennsylvania, the second of six children. Her father, a factory worker, also eked out a living as a subsistence farmer. At 10 years old, Barrett could drive a car, milk a cow, and shoe, saddle and feed the family's 24 horses. By 12, the young girl was guiding trail rides. Her father dreamed of taking the family to Arizona where he had been a cowboy. Unfortunately, he died when Barrett was just 13. After his death, young Barrett rose to the occasion and took care of her mother and her five siblings. This is a true 'rags to riches' story that Horatio Alger could easily have written, but we decided to let Barbara Barrett tell her own story.

Q: Did your father give you any advice?

A: He asked me what I wanted to be when I grew up. Being of that certain generation, I knew I had three choices: teacher, secretary, or nurse. I said "nurse," and he said, "Why not a doctor?" That was my breakaway moment; I was freed to believe that my gender could do whatever we wanted. Ever since, I've always said to myself, "I can do this."

Q: While at Arizona State University, you became a state legislative intern for the then-Senator Sandra Day O'Connor (the first woman appointed to the Supreme Court). What was that like?

A: At the time, she was the first American woman majority leader of any state house or senate. She was an extraordinary role model, and opened my mind to thinking that in the future, women would ►



Normally, it takes years to become a professional astronaut, but in my case, it was a very compressed four and one-half month training programme. You still have to do the whole syllabus, and they won't let you launch unless you've passed all the exams

► have access to good jobs. She was a lawyer so I thought I could get a law degree. And while she was married to a wonderful guy, she wasn't in the job because of her husband; she was in the job because she was great.

Q: You went to law school, clerked at a Fortune 500 company, joined a Phoenix, Arizona law firm, and then went to Washington DC as a Civil Aeronautics board vice-chairman. Then what?

A: I came back to Arizona and joined a law firm first as counsel, then as a partner. I went back to Washington DC and became the deputy administrator (the #2 spot) in the FAA (Federal Aviation Administration). Then I practised law and started serving on corporate boards. I was CEO of the AMA (American Management Association).

Q: Then you became a corporate officer of another Fortune 500 company. Wasn't that around the time you met your husband, Craig Barrett?

A: Yes, in 1979. One late afternoon I hiked up Squaw Peak (now called Piestewa Peak) in Phoenix, Arizona. I arrived at the summit and was watching the setting sun when I heard a man's

footsteps. We began to chat and he said he was a manager in a small electronics firm; I figured he was the night clerk at Radio Shack. It turned out he was the General Manager of Intel Corporation and is now the retired Chairman and CEO.

Q: You're an accidental astronaut. How did that happen?

A: Space Adventures, which runs the space tourism programmes and whose CEO I knew, had an unexpected short lead-time seat available for a backup astronaut. They had their primary astronaut, but they didn't have a backup. They thought I was fit enough, and as a pilot, thought I'd have the basic aeronautical understanding. Normally, it takes years to become a professional astronaut, but in my case, it was a very compressed four and one-half month training programme. You still have to do the whole syllabus, and they won't let you launch unless you've passed all the exams.

Q: Let's go back a second. You said you had your pilot's licence?

A: My Dad, who didn't want us to be afraid of flying, took my brother and me on a short flight in a four-seater Piper Cub when I was about six years old. I wasn't afraid - I loved it! It inspired

me one Christmas to gift my husband with pilot licence training. He didn't care about flying, so I did the training and became a pilot.

Q: Do you fly now?

A: I stay current but I don't fly enough; so now I usually fly only with an instructor pilot.

Q: In 1994, you were the first female Republican candidate to run for Governor of Arizona. Would you do it again?

A: It's a knock-down tough business, but it ended up being an absolute joy and I wouldn't shy away from doing it again. You never say never in politics.

Q: You were the first civilian woman to land in an FA-18 Hornet on an aircraft carrier. How did that happen?

A: I was a civilian advisor to the Secretary of Defense and Chairman of the Joint Chiefs of Staff at the Pentagon. At the time, women could fly tankers and transports but not fighters or bombers. A law had been passed in 1948 that precluded women from flying aircraft "engaged in combat". We saw the law changed. I believe that fathers of daughters often work magic to let women have the opportunity to prove themselves. An admiral, who was the father of daughters, invited me to train up and see if I could qualify to fly an F-18. I had the privilege of landing in an F-18 Hornet on an aircraft carrier, the Nimitz.

Q: How did you happen to become Ambassador to Finland and what was it like?

A: There was an unexpected opening and I was asked if I'd be willing to do it. The privilege of serving America in a foreign country was a significant responsibility. I hoped to exemplify public diplomacy as ambassador. I made a special effort to communicate with the people of Finland, not just the government. I had a great time bicycling across Finland, rounding up reindeer, dog sledding, downhill and cross-country skiing. The Finnish Air Force flies American-made F-18s. The Chief of Staff of the Finnish Air Force challenged me to a dogfight in the skies over northern Finland.

Q: Who won?

A: He got me once, I got him once. It was ►►

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I had a great time bicycling across Finland, rounding up reindeer, dog sledding, downhill and cross-country skiing



► a diplomatic solution, so we didn't do a match-breaker. My flight brought home that message.

Q: You've been Deputy Administrator of the FAA and Vice Chair of the CAB (Civil Aeronautics Board). What's the most important thing you've learned about aviation?

A: Through time, commerce has gone where transportation is available. Camel caravans on the Silk Route were an early method of commerce. Then ships led commerce where waterways were the means of transportation. In our age, commerce moves by aviation. Sure, rail, car and bus are important; but time-sensitive, perishable and high-value products go by air. And so today, aviation is commerce. The economy moves on the wings of aircraft.

Q: I understand that each year you make a 'life list'?

A: For decades I've been keeping a 'life list'. Every year around the holidays, I look back and say, "What did I do this year that was a life-enriching moment?" And then I say, "What are the things I'd like to do in my life?" Each year, I try to do one exertive vacation, something that will either make me get in shape and stay in shape or I'm going to hurt. Climbing Kilimanjaro, hiking New Zealand's Milford Trek, bicycling across Finland, summiting Mt Whitney and hiking the Grand Canyon rim-to-rim have helped me stay in shape. It's not so much an adventure; it's my version of a fitness programme.

Q: I know you are deeply concerned with economic opportunity for women?

A: My mother was struck – through no action of her own – by the sudden death of my father, who had a heart attack. One moment she was comfortably a wife and mother, not financially well off, but okay. And all of a sudden, she was widowed with six kids and dependent on unskilled local jobs. That inspired me to believe that women need to have alternatives. You don't know what life is going to deal you, so you need to have the ability to help yourself.

Q: What is your passion?

A: I love life; I love people, and I love to open opportunities for people. My passion is education and helping women develop their full potential. My astronaut patch said 'Knowledge is the Gateway'. Knowledge opens doors.

Q: In 1983, you and your husband purchased Triple Creek Ranch. Why did you buy this ranch?

A: Twenty years ago, we wanted a second home, a retreat someplace among mountains and adjacent to a national forest or national park. We'd gone to Triple Creek Ranch as guests and loved the majestic mountains. And when it came up for sale, we bought the ranch. We made many changes: we took down some cabins, expanded and freshened up others, and built more upscale luxury cabins. We upgraded the wine cellar, food and landscaping; we added western wall art and sculptures. And since then, we've tripled the size of the guest ranch and added an additional 26,000 acres of cattle ranch and nature preserve. And we've added a couple hundred head of bison – the iconic American buffalo.

Q: How much time do you spend there?

A: We're at Triple Creek Ranch at least once a month consistently since we bought it.

Q: How do you get there?

A: We fly privately into Ravalli County Airport in Hamilton, Montana.

Q: Why do you travel privately?

A: Private flying just makes sense. We get closer access, save ground time and avoid the uncertainty of missed connections. It's much faster and more convenient. Private flight is more ►►



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Q: Do you own? Charter?

A: We charter.

Q: When you charter, which outfit do you choose?

A: It varies. I generally look at the options. I'm an equal opportunity user, not consistently with any one provider.

Q: Do you have a preference in planes?

A: If it's a close hop, we'll often use a small Citation or a Lear. But Hawkers on longer hauls, or sometimes for special travel, Gulfstreams and Challengers.

Q: If you were going to upgrade from your existing plane, which model would you most like to move to?

A: To get to Triple Creek Ranch, nearby is a small airport, which can't handle a very large jet, so we use small jets there. But for the long-haul transcontinental or intercontinental flights, then a Challenger or Gulfstream would be a dream – or a Cessna Citation. Citation 10 is terrific because it's so fast.

Q: Is that what you would buy today if you were going to buy a jet?

A: A Citation 10 is fabulous for big airports but not good for Montana's smaller airfields. That's the trade-off. So chartering allows me to adjust the aircraft type for the destination.

Q: Do you give any thought to catering on flights? Do you specify any requirement as opposed to leaving it up to the operator?

A: My go-to answer is a shrimp cocktail, because almost every place can do a shrimp cocktail. When all else fails, a shrimp cocktail usually works.

Q: What's a typical day like for you?

A: There aren't many typical days. Today is a desk day for me, so I got up before six, ran a mile and a half, and am doing desk work until I fly to California to give the talk for the Smithsonian tonight in Burbank. I have a meeting tomorrow morning with an Air Force general officer, and then I have a Caltech board meeting.

Q: You've done so much. Do you have any goals for the future?

A: What I really spend a lot of time on these days is working to make the world a better place for people in whatever ways I'm able. I spend a lot of time on university projects especially STEM for girls, working to help women in war-torn and impoverished areas, helping women become economically empowered, helping women start businesses to provide economic stability for themselves and their families.

Q: What does leadership mean to you?

A: It means having a vision, and being of such a character that other people are willing to sign up to pursue and accomplish that vision. ■



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Insuring a smooth flight

Anthony Harrington talks to Neil Book, President and CEO, Jet Support Services Inc, (JSSI)

Turbojet engines, taken as a whole, are incredibly reliable pieces of machinery, as well as being an amazing assembly of precisely engineered solutions to a variety of very complicated problems. However, from time to time yellow lights do come on, necessitating an unanticipated and generally very pricey visit to the owner's favourite MRO shop. This is where JSSI comes in very strongly, though it is also there for all those regular, scheduled events.

As the world's largest independent provider of hourly cost maintenance programmes for engines and airframes, JSSI is the alternative to the traditional OEM warranty programme.

Q: What was the inspiration for JSSI getting off the ground in the first place and how was it funded in those early days?

A: The company was founded by four people back in 1989, and of those four, Louis Seno, our Chairman Emeritus and special advisor, is still very much a part of JSSI. These founders were real visionaries. At the time there had never been an alternative to the manufacturer's engine programme. In 1989 JSSI launched a product that was competitive to the manufacturer's programme on what is, today, the 731 engine; at the time it was called the Garratt. For the first time the consumer in the aviation market had an alternative to the manufacturer's offering.

Q: How was that even possible to do?

A: The founders literally started with a very small amount of capital, but what they did was very innovative, and their solution is still one that we use today. They created a trust fund to house the reserves. At a stroke this meant that the customer could be confident that even if JSSI went out of business, the trust fund would remain in place to pay out any claims they might have.

As a start-up, competing with Honeywell, this provided a level of safety and comfort. Today, we

still keep all our scheduled maintenance reserves in the trust fund, even though our company has become immeasurably stronger and continues to grow. This approach provides a level of certainty that you actually do not get from a manufacturer. For example, just ask the former enrollees in the Beechcraft or Hawker lines about their experiences with their engine maintenance programmes when Hawker Beechcraft ran into difficulties. They were pushed to the end of the creditors' line as unsecured creditors.





We distinguished ourselves by not requiring customers to pay a buy-in fee. We offered a buy-in option, which would give the customer 100% coverage when they came to a maintenance moment

So we do not commingle our funds. We segregate them.

Q: You started with the one engine. How did you go on from there?

A: For the next five years JSSI rolled out a programme that focused on developing an appropriate maintenance package for every business aviation engine on the market. In those days there was not a whole lot of pricing sophistication when it came to costing these programmes. The basic philosophy was to see what the manufacturers were charging and then to charge a little less. It wasn't sophisticated but it worked!

In those early days we enrolled virtually no new aircraft. They were all pre-owned coming onto the market or already flying. We distinguished ourselves by not requiring customers to pay a buy-in fee. We offered a buy-in option, which would give the customer 100% coverage when they came to a maintenance moment. But we also provided a pro rata option, which meant that they could enter the programme and when the maintenance event took place, we would each pay our relevant share.

What this means is that if you have an overhaul interval at 5,000 hours, say, and you brought your engine into the programme with 2,500 hours on the clock, then when the overhaul happened, we would each pay 50%. This enabled clients to avoid having to make a major capital investment upfront in order to enter the programme, and it worked extremely well in helping us to generate business.

It is important to realise that customers can enrol their engine any point in their lifecycle. However, enrolling on day one means if you have an unscheduled event we meet 100% of that bill. They pay us monthly, retrospectively, based on the actual number of hours flown during the course of the month.

Q: So the main benefit of this is budget stability?

A: Exactly. If you are a CFO in a corporation or in an operator, you love us, because you know that you are not going to have nasty shocks hitting your balance sheet. We offer predictability. There are inevitable costs to running an aircraft, and engine and airframe maintenance can be a big part of this. Coming in with JSSI gives you a very smooth, very predictable, pay-by-the-hour approach. At the same time, because of our buying power, you are also lowering the overall cost of your maintenance, since we get excellent rates from suppliers – better than a lone owner could expect to negotiate for themselves.

Q: How do you grow the business? It looks as if you are totally reliant on sales of new and pre-owned aircraft to grow, so a flat patch in the industry might be uncomfortable for you?

A: Actually, to this point in 2016 we have had our strongest year in the company's history. We have enrolled 250 aircraft into our programme. There are two areas, new and pre-owned, that we can go for. This year I would say that 15% of all new jets delivered have come with JSSI power-by-the-hour programmes. This might sound uncomfortable for the manufacturing OEMs, but ultimately they still benefit. They have happy clients who aren't getting financially jolted if something goes wrong. And of course we are still buying the OEMs' parts and sending the aircraft to their authorised MROs.

However, the real winner is the consumer. If we were not in this space, the cost the consumer would bear would be far higher. There would be no competition. The manufacturer could charge what they wanted and provide any level of service that suited them. Competition among manufacturers would exert some discipline – but once you've bought a certain model, that choice vanishes and you would be wholly reliant on the manufacturer. No matter how well you get on with the manufacturer, that is not an entirely comfortable position to be in.

Our philosophy is: we don't build them, but we make them better. We have a team of 70 dedicated professionals strategically placed around the world. These folk are ready to fly out and examine your aircraft, whatever



the situation. We should be one of the first calls you make in an AOG situation, and we will coordinate getting you back flying again. We cover everything, including the cost of the OEM's mobile response team coming out to your aircraft to get it airworthy again.

Q: What about regional growth and growth in new market areas?

A: This is where we are seeing tremendous opportunities. We have really committed to Asia, China and Africa, and we are seeing great growth in these areas. And we are also signing large fleet deals with helicopter owners as well as with regional airline operators. Sun Air, a BA regional airline, has placed its whole fleet with us, and we signed two other regional airline deals this year, so we are really getting some traction and the future looks bright. ■



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Founder and Managing Director
Geoffery Cassidy talks with Anthony Harrington

Room at the top



Zetta Jet's stated mission is to transform the ultra-premium end of the luxury charter market by delivering a unique combination of unmatched service excellence, state-of-the-art long-range jets and a huge focus on delivering a top-quality service for the most discerning (and wealthiest) people on the planet.

In so doing, as the company's managing director, Geoffery Cassidy notes, Zetta Jet has stood the traditional air charter market business model on its head. Instead of seeking to broaden the base of the air charter market by competing on price and trying to attract more and more "first-time private fliers" to the market, it has unashamedly moved its pricing model up into the stratospheric premium market. There is virtually no chance that somebody who might be tempted to skip flying scheduled because they've been tempted by an ultra-low priced

'empty leg' flight on a light jet, will ever seriously contemplate emptying their pockets for a one-off seat on a Zetta Jet Global 6000.

Of course, they could if they wanted, and Zetta would probably be happy to fly them, but if you count your pennies a Zetta Jet seat would probably cost you a factor of x more than you'd make in a year. This really is a service primarily aimed at the ultra-high net worth market.

The company started out in August 2015 with a single Global 6000. Today it has 12 Global 6000s and in November, at the 2016 NBAA, it announced an order for four Challenger 650s. The aircraft are actually being acquired by China's Minsheng Financial Leasing and will be leased back to Zetta Jet. The 650 is a 4000 nautical mile aircraft, as against the Global 6000's range of 6,000 nm, but claims the widest cabin in its class, and the interiors are each being individually designed to be the height of luxury.



"Most operators, when they buy more than one aircraft of a certain type tend to standardise the layouts. From their standpoint this allows them to deliver a consistent, standardised service and makes it irrelevant which aircraft is available at any point in time," Cassidy comments.

Instead, Zetta Jet has gone in the diametrically opposite direction. Each of its Globals has a unique design. This enables the operator to achieve a far tighter match to each client's requirements. "Some people like a dark wood interior. Some like light wood. Some like a futurist design, while some like a very traditional approach. We've tried to cover as many of the options as we can, so that the aircraft is as close to what they would want from their own aircraft as possible," he notes.

So far, all the signs are that the approach is succeeding handsomely. "In business terms, we are doing 30% to 40% more business than we had anticipated. We are also the only Part 135 operator cleared to conduct polar flights. On a trip like Beijing to Montreal, being able to fly a direct polar route enables us to fly direct and to cut a significant amount of time out of the trip," Cassidy adds.

The idea to target the very top end of the charter market came out of what Cassidy terms "a lifetime in aviation". "My father owned and operated planes and I was brought up with aviation as an everyday fact. I started a law degree

when I finished school but ended up taking a career in aviation, running my own aircraft management company," he remembers. The company looked after six jets owned by six different customers, and Cassidy added a cargo company to his portfolio with Boeing 737s'.

The two businesses were doing well, but looking at the charter market, it was clear to Cassidy that the major player in the market was more focused on the commodity middle end of the market and was heavily engaged in a volume play. In his view, too, the competitor's efforts to expand its business in the Asian and North American markets were not proving particularly fruitful.

In short, he saw a clear gap in the market for a company willing to set out its stall with the ultimate, premium traveller in mind. Sales, so far, have proved the accuracy of this insight. Zetta Jet is currently achieving more than 100 hours a month across its fleet, which, when you consider the premium price it charges, is very satisfactory.

"Our biggest competition comes not from the other major player in the charter market, but from those major commercial airlines, like Etihad, Qatar and Singapore Airlines who have outfitted a few of their aircraft with ultra-luxury first class suites, designed to attract top executives who would normally fly private.

"We aim to show these executives that private still has the edge both in terms of the

Some people like a dark wood interior. Some like light wood. Some like a futurist design, while some like a very traditional approach. We've tried to cover as many of the options as we can



luxuriousness of the interior and the quality of the service provided. And of course, because they arrive at a luxury FBO, instead of being decanted into the general travelling public at a mainstream airport," Cassidy notes.

Today, 60% of Zetta Jet's sales are to North America and Europe, and of that percentage, a further 60% is wholesale, coming direct from brokers who are looking to achieve the best possible experience for their most discerning and demanding clients. "The brokers like us because they know that we can deliver a luxury experience, and they know, too, that we will not attempt to pinch their clients. They can't be that confident of honest behaviour from some other operators in the charter market," Cassidy says.

In the fifteen months or so that the company has been operating, it has yet to have a single staff member resign - though a few have had to be gently eased out as not being up to the high standards demanded. "This success is all about the brand image and the ethos that we have been able to establish. However, we are far from complacent. Keeping the company in

the position to deliver the highest standards of service, day in and day out, is a constant challenge," Cassidy observes.

One area where the company has few difficulties is when it comes to hiring pilots. Every pilot wants to be able to add a significant number of hours on a Global 6000 or a Challenger 650 to their résumé. Plus, Zetta Jet customers are the ultimate globetrotters, heading for exotic destinations around the world. When Zetta Jet has an opening for pilots it gets swamped with applications.

So how was a relatively new player able to convince a funder like Minsheng to back its play? The answer lies partly in the deep network of contacts that Cassidy and his partners have in Singapore and across Asia, and partly due to the fact that we have set out and continued to not only deliver but outperform our targets. "Minsheng wants to be the dominant finance leasing house on the planet. For any finance house with this target, large business jets constitute a very appealing business to be in!" he concludes. ■



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The importance of listening



Jean-Christophe Gallagher talks to *Anthony Harrington* about his new role heading up Bombardier's client services

With new business jet sales likely to be at best flat over the next year or so, it makes sense for airframe OEMs to take a fresh look at the revenue and service opportunities that lie in their large existing base of users. Bombardier Business Aircraft recently moved Jean-Christophe Gallagher from his role as Vice President, Strategy, Marketing and Innovation, to a new position as Head of Customer Experience. This puts him in charge of Bombardier's entire customer service organisation. *EVA* asked him what this means for him, for Bombardier and for the company's client base.

A: I have now been in the role for three

months. We have some 4,500 Bombardier aircraft flying around the world so that is a very big installed base of customers. Getting to know our customers is part of my mission, as is getting to know our entire service network around the world.

There is tremendous potential for Bombardier to grow its after-market business. Before this, while we have always taken pride in having a world-class support network for our entire fleet of Bombardier aircraft, the focus has been on new aircraft. Our interest in bringing new and world-class aircraft to market is just as intense as ever, as demonstrated by the recent first flight in November of our Global 7000 business jet, but in addition to this, we are also placing a great deal of focus – more than ever –



We are hiring some 200 new technicians and project managers to boost our capacity across our service centre network, so that we are best placed to service more of our own fleet of aircraft

on the customer experience in the after-market segment. As Bombardier becomes more active in the after-market, our team is well-positioned to support our customers, their aircraft and all their maintenance and retrofitting needs.

As such, we are looking to expand and enhance our service offerings. For example, we are hiring some 200 new technicians and project managers to boost our capacity across our service centre network, so that we are best placed to service more of our own fleet of aircraft.

Q: The new Bombardier service centre at Biggin Hill will be part of that, doubtless?

A: Exactly so, and not just at Biggin Hill. We have expansion projects and plans for new facilities all around the world. Our new service

centre in Biggin Hill will soon see the first Bombardier aircraft serviced there and it will be a very important European MRO facility for us. I have just recently returned from a visit to the facility at Biggin Hill and it is an exceptional place. We've completed all the technical training required and received our certification as the facility became operational in December this year.

The OEM has so much to offer in terms of value-added services and particularly when it comes to scheduled maintenance. When the aircraft is a little older, a little further along in its life cycle, the OEM has vast knowledge about the availability of enhancements and upgrades that can be applied to that aircraft to keep it up to date. Whether it's connectivity in the cabin, ►►

► or avionics upgrades for the pilots the OEM is ideally suited to provide these offerings. So, it is all about unlocking these growth levers for Bombardier's after-market business.

The most important thing for me is twofold: to be totally connected to the customers so that they feel free to call me directly, to tell me what we are doing right - and if there's something wrong, how we can improve. Much of my day now is spent listening to our customers and getting their feedback. We are fortunate to have a very varied customer base flying out of virtually every country in the world. So we receive tremendous feedback.

Secondly, I want to ensure that we are constantly improving our service delivery and service quality and that everyone in our entire support infrastructure is satisfied and engaged because this is what ultimately drives the customer experience.

Q: What is the appetite like among owners for upgrades?

A: My conversations with our customers and operators make it very clear that there is a tremendous appetite out there for getting modern technology onto older aircraft. Owners and operators notice the new technology that will be available on the Global 7000, for example, or the way we are rolling out Ka-band high-speed internet onto our Global aircraft. So we are focused on bringing these technologies to the fleet as factory retrofitted services.

Our deep engineering know-how about our own aircraft allows us to add value for our existing customers in new ways, so that latest products, technology and innovations can be retrofitted to their existing Bombardier product.

Q: You're also quite involved in addressing climate change. At NBAA you spoke on the environment and on the OEM's role



in helping business aviation meet its environmental objectives.

A: I have been involved in environmental policy discussions in business aviation for more than a decade now. This is something I personally feel passionate about and want to be involved in. Over the years the environmental debate in business aviation has shifted from noise emissions, which dominated the environmental debates a decade ago, to carbon emissions today. Through intense collaboration between airframers and engine makers, there is a lot that the business aviation industry has achieved on the noise reduction front and to make life easier for communities living around airports.

Today that same focus exists on reducing business aviation's carbon footprint, and Bombardier is one of the OEMs leading the discussion.

But we also need to put this into perspective. Aviation as a whole contributes just 2% of world greenhouse gas emissions, and business aviation itself contributes just 2% of that 2%. In other words, our net contribution to global warming, in terms of greenhouse gas emissions, is just 0.04%. That being said, as one of the leaders in business aviation we are committed to bring to market aircraft that continue to show enhanced fuel efficiencies.

The Global 7000 business jet, for example,

is as much as 20% more fuel efficient than previous generations of Bombardier aircraft. There is tremendous pride right across the company right now regarding this aircraft. After years of hard work and planning come to fruition, the Global 7000 aircraft took to the air for the first time in early November. On that day, you could really see the pride in everyone's eyes.

Q: How much is fuel efficiency and "greenness" down to the engine OEM and how much is down to the airframe OEM?

A: We generally say that it works out about 50-50. While the engine OEM focuses on making its engines as lean and as fuel efficient as possible, the airframer constantly works to improve the aerodynamic characteristics of the aircraft. And every new aircraft Bombardier has introduced in recent years has been more efficient and contributed fewer emissions than previous models.

Q: Any final, forward-looking thoughts you'd like to share?

A: We understand the importance of investing in our products and services. Our ultimate goal is to continue to find more ways and more places to serve our customers with world-class aircraft and outstanding after-market services. This is what we are all about. ■





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Crafting beauty

EVA talks to F/LIST CEO Katharina List-Nagl

Q: Can you tell us a bit about how F/LIST got started?

A: The company was formed as a small carpentry firm by my grandfather in 1950, with just seven employees. My father joined the company as a carpenter in 1962 and I am now the third generation. Our route in to business aviation was somewhat tangential. In the 1980s we began doing work outfitting major hotels across Europe. It was a good line of business for us and we expanded a lot, with good orders across Eastern Europe and Germany.

At one point we were called in to equip the Louis Jacobs Hotel in Hamburg. There was a famous guest there, called Peter Deilmann. He owned a shipyard and built the MS Deutschland. He was really impressed with the interior work going on in the hotel and asked who was responsible. The management told him: Company List from Austria. So he asked us if we were interested in furnishing a cruise ship. We said yes, of course, but we had very little idea of the enormous scale involved in fitting out a multi-deck cruise ship.

So it was an expensive entry into the ship business for us and a steep learning curve. On subsequent orders we soon found that we were coming up against a large number of competitors in the cruise ship space, and that it was a space where a philosophy of commodity pricing ruled. So we shifted and specialised instead in the yachting world. We started this in the late 1990s, and we were responsible for furnishing the world's first true super-yacht of 150 metres and more. We developed a lot of products that were both luxurious and price competitive for the interior of the yacht and for the exterior.

Q: At what point did you become centrally involved in all this?

A: Actually, I never had a chance not to be deeply involved. I used to accompany my father when I was just seven on his trips round Europe buying veneers. What we were looking for, once we got involved with seagoing vessels, was material that would be more weather resistant and that could handle exposure to wind, rain and salt spray without swelling. We found we had to develop our own product. This was a kind of foam. We decided that because the product we developed was very light weight by comparison with plywood, and yet wore very well and was very durable, that we had a great product, as well as great craft skills, that would be good for the business aviation industry. Weight is very critical in business aviation so we had a great story to tell.

Q: So how did you make the transition to business aviation?

A: We have had considerable success in the sector but the initial introduction was not easy. We took the product to FACC, a big composite manufacturer for the aviation industry in Austria. They deliver products for Airbus, Boeing, for example, and for Bombardier and Embraer. Initially, despite our high hopes, they were not interested. Our complete lack of any track record in business aviation and the fact that we were unknown to them made them show us the door. But we went back for a second time in 2004 and told them the story yet again and this time they listened. FACC had won contracts for the Learjet 40 and 45 and now they were interested. Shortly thereafter we delivered components for the internal cabins for both aircraft. This was followed by a contract to provide an interior completion for the Challenger 300 in 2006, and then we began completions work on a number of Challenger 300s. FACC remains a very important partner of ours today. ▶





We are always trying to finish a project more efficiently, more aesthetically, so that each project is better than the one before it. We are always hungry

▶ What makes F/LIST special is that we pride ourselves on being excellent craftsmen. We have a very high level of skill and all our employees are very experienced in their trades and specialisms. This allows us to reproduce aesthetic qualities perfectly and to get a project completed first time, every time. We are never satisfied with what we have just done. We are always trying to finish a project more efficiently, more aesthetically, so that each project is better than the one before it. We are always hungry. We are not on the design side, in a way that Howard Guy, for example, our partner on the Aerion AS2 Supersonic Jet, is a designer. Our strength is our ability to work with innovative materials to create the interior that the designer visualises.

One of the latest things we developed, which shows the quality of our craftsmanship, is that we can do 3D curves in veneer. People try to finish flat veneer services with edges of wood or other material. We have developed a way of producing a sharply curved veneer finish that has a great deal of aesthetic appeal. By itself it is not such a great thing, but it shows the level of skill that F/LIST has.

We also deliver heated stone flooring solutions that are ultra-thin. We make them so that they are certifiable for aircraft usage.

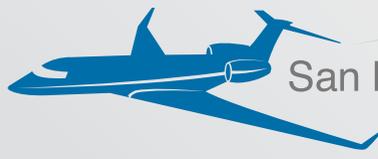
We have also had a very long standing relationship with Lufthansa Technik. The INAIRVATION Partnership brings together Lufthansa Technik, DesignQ, Schott and F/LIST. The idea was to integrate the cabin furniture with the cabin elec-

tronics as a one-stop shop for the whole aircraft cabin. The idea is that you just deal with a single company, INAIRVATION, for the whole cabin completions project. We get the raw data from the OEM, then we work to integrate the furniture and the cabin electronics together as a composite whole. Right now though, there are not a lot of new completions projects. So instead, we are targeting the after-market particularly. We are producing kits that make it easy for owners and operators to upgrade their cabins including IFE with pre-engineered modules, creating minimum down-time.

Q: The INAIRVATION Partnership won the design and completions contract for Aerion's AS2 Supersonic Jet, which now looks odds on to become a reality thanks to backing from Airbus. That must be a great win for you?

A: It is true that we have the Aerion contract and DesignQ has finished the concept design. But at the moment Aerion are taking some time out to evaluate and make their choice of engines. We have completed the concept work but we cannot go further right now. It is a fantastic, high-profile project to be involved with though, and we look forward to being involved with the actual completions when the jet goes into production at some future date. ■





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Building on a good thing

Satcom Direct's Michael Christensen, Director, Middle East, talks to EVA about the company's range of new services



When you can offer high-speed connectivity between business aircraft and the ground, it becomes possible to do far more than just be the major comms link provider. As Michael Christensen, Director for Satcom Direct, EMEA, points out, the company has built on its router technology and its reseller agreements with communications providers such as ViaSat, Inmarsat, Panasonic and SmartSky Networks to launch a range of new, value-added products.

"There are three main new things that we have done over the course of 2016, that are quite exciting for our customer base. With the arrival of higher speed bandwidth, such as Ka-band from Inmarsat, Panasonic Ku-band for business aviation, and ViaSat's expanding global network, we have a throughput that enables us to deliver streaming media content to the aircraft with SD Entertainment," he explains.

"It was clear to us that many of our customers are quite happy using their personal devices rather than

cabin monitors, to access the content of their choice while travelling on business aircraft. The satellite technology we have today in aviation provides us with enough bandwidth to enable this type of solution. SD Entertainment provides a range of solutions to meet the varying demands for media content," Christensen comments. SD Entertainment will provide customers with access to live TV, the latest movies and TV shows, as well as streaming media content.

Satcom Direct (SD) has also signed a partnership with Panasonic Avionics that makes SD the first business aviation value-added reseller for Panasonic's global business aviation connectivity service. "What Panasonic have brought out is prioritised traffic and bandwidth optimisation for the business aviation and government markets, providing a superior customer experience," he says.

The Panasonic network is a Ku-band system that provides an alternative communications 'pipe' into the aircraft. "Customers now have a range of options when it comes to connectivity and they can choose the one that best suits their needs while travelling. We are looking at consistent performance and bandwidth on the Pana-

sonic network, and that is very attractive to some customers. You can get up to 4Mb to the aircraft with this network," Christensen explains.

Today, this is a fuselage-mounted antenna, so it is only suited to the largest business aviation aircraft such as the BBJ or ACJ variants. "There is a solution coming out shortly for the likes of Bombardier, and the Dassault Falcon range. Panasonic, with ourselves as partners, is fully engaging the entire spectrum of business aviation so you will most certainly see solutions for smaller jets soon," he comments.

Panasonic also has its own TV channel service, which SD will be reselling. We'll have our own SDR router on the aircraft and it will be integrated with the Panasonic network, which means clients will be able to use their cell phones on the Aircraft and will be able to use a wide mix of devices."

The third new service SD introduced earlier

in 2016, at EBACE, is SD Pro. As Christensen explains, this is a ground-based piece of software that allows all the different departments in a flight support room, or a flight operations desk, to have all the data they need brought together on a single screen. "We have partnered with a number of folks to deliver real-time data about the aircraft, on a single screen or device.

"The system uses real-time data from the aircraft to populate and drive a whole range of views of what is going on, via a 'dashboard' approach that lets the user see instantly if there is a problem somewhere, or if all is going well. So, for example, with SD Pro running on a laptop, tablet, or smart device in front of you, you can view and manage flight logs, performance data from the aircraft, scheduling and trip planning as well as look at maintenance information and the aircraft's operating history," Christensen outlines.

"What we have done is to aggregate information from multiple sources, most of which the flight department will already be using, but will not have access to on a single screen," he notes.

The modules on its customisable dashboard display deeper views of all relevant data, and the modules themselves can be customised to meet individual flight department and team member requirements.

"We conceived the idea for SD Pro when we saw how members of aircraft management companies and flight departments had to access numerous information sources, multiple screens, and disparate access points to do their jobs. SD Pro changes that by bringing together many of these functions into a modular dashboard. We've already partnered with a number of providers to integrate the systems flight departments use most - and more partnerships are in the works," Christensen says. ■

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The art of glass



One of the perennial problems with glassware on business jets is that glass is inherently fragile, and fine glassware – the kind that you can confidently place on the crisp tablecloth on a US\$60 million jet – does not take kindly to turbulence. Frans van Hapert, Founder, President and CEO of Air-Craftglass, set out some five years ago to solve this problem. The family company has a long history in glass making and innovation and the idea of looking for something akin to unbreakable glass appealed to them.

The idea was sparked off in 2008 by a query from a client who wanted to buy a glass staircase for her Boeing 747-800 business jet. After months of preparations and meetings at the end of the day it was a 'no go' due to the fact that the staircase was too heavy – and, last but not least, the glass could break during an emergency landing. "It turned into a bit of a sales disaster. So we looked into making "glass that would not break and which was lightweight" van Hapert explains.

The solution that looked the most promising was to laminate the glass in some way, which is the industry standard way of providing bullet-proof glass, or super toughened glass. However, there were immediate problems.

"You cannot use the standard laminate used by the industry. Not only does it not look right on the glass product, the lamination film can be stronger than the glass which can give spontaneous breaks, which can be nasty. The biggest disadvantage, however, is that these standard laminating films will burn and will not pass the fire tests as required in the aircraft industry. So over a five-year period we developed our own lamination system that we have now patented," he explains.

Van Hapert and his team found that they could extend the lamination process to other products, and in particular to mirrors, lenses/dust panels, shower panels and wood veneers. "With wood veneers, because of the fire and safety regulations, there are only some eight to

nine types of wood veneer that can be used in a business jet interior. All the rest of all available wood veneers can come out as a dullish grey, which is far from ideal. With our lamination process we can fire-proof a wide range of veneers and when they have been laminated, they have a high gloss finish due to the glass cover," he notes.

Most wood veneers, by way of contrast, lose a lot of their appeal when they are laminated by conventional processes. "This is a real game changer for the interior completions market," he adds.

Air-Craftglass's laminated glass mirrors using special ultrathin glass have appeal not just for business jets, but also for the first class and business class sections of commercial airlines. "The commercial airlines have to spend significant sums replacing the mirrors in their lavatories and galleys, since they get scratched over time. With our process, the glass is pretty well scratch proof," he notes.

Much the same is true of shower paneling in business jets. Today, just about all of this is some form of plastic and it scratches very easily. Air-Craftglass's laminated thin glass keeps the shower room looking good for far longer. Plus van Hapert points out that the conventional plas-

tic materials used as a substitute for glass tend to have very high manufacturing reject rates, with some 70% of the material being judged unsuitable for use. "With our product we only ship plug-and-play, ready-to-install products and there is very little waste in production," he comments.

"We are fortunate in having very skilled people, some with over 40 years of experience in this industry. We have a range of new products that we have developed, including some interesting and extreme ultrathin laminated versions of just 0.6 mm. thick."

Van Hapert says he is looking forward to 2017 with considerable optimism. "We see a wave starting of upgrades to business jet interiors, and that will provide plenty of opportunities for us. We are also targeting the commercial market, where we are looking to benefit from the upgrades that some major airlines are currently carrying out with respect to their business class and first class spaces. Our products fit perfectly into the luxury high-end experience and can look really good in a luxury aircraft or first class cabin. If you buy an aircraft for tens of millions of dollars you do not want to be looking at scratched plastic in the cabin. What you want is the best high-end materials possible, and this is what we are offering," he concludes. ■





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Keeping the fuel flowing

Anthony Banome, Director of Fuel Sales at Meridian, on the challenges and delights of keeping customers topped up

To many US FBOs, even with the degree of unbundling of services that is now becoming common in the sector (and which has been standard practice in Europe for years), fuel remains the key factor in FBO profitability. Anthony Banome has been in charge of fuel sales at Meridian's Teterboro FBO for years and is now also responsible for fuel sales at the company's recently launched Hayward FBO on the West Coast. Banome understands better than most just what is entailed in coaxing clients into making a particular FBO their favourite top-up slot.

Q: With owners and operators having so much choice about where they buy their fuel, and with one gallon of jet fuel being much like another, how do you ensure you get first bite at the cherry?

A: This is an absolutely key point for all US FBOs. Fuel really is still where just about all of us make the real bucks. You are looking, obviously, in the first instance for the pilot to elect to top up with you. But you absolutely have to know who the decision maker is in each and every operation. If the pilot is working for a charter company, then they may well not be the key decision maker. Where they are going to buy their fuel may well rest with someone who is driving a desk deep in the heart of the charter operation. You need to know how to find that

person and how to have a sensible conversation with them that is all about mutual advantages. If the jet visiting your FBO is on a Part 91 ticket then it could well be the chief pilot who is dictating fuel stops.

A 135 operator will know all the legs of a particular trip in advance, of course. If they need 1,500 litres in two locations, that means they are probably going to top up with 1,000 litres in one location and 500 in the other. It matters hugely whether you are their choice for the 1,000 litres pit stop or whether you are just down for the light top-up. It is up to someone in my position to make sure that we get the 1,000 litre uplift rather than the 500.

Q: So how do you get it?

A: There can be a number of factors in play. It might be that you can win it purely on price, if they are well known to you and they are meeting the minimum uplift levels to trigger good discounts. However, if you are quite an early stop in their plans then you need to be able to show them that given your price, they are not going to be disadvantaged by taking on a heavier fuel load from you.

Obviously, weight affects range and fuel burn. Everyone knows that. So there is an automatic assumption that it will be more economical for them to work down to flying light on fuel, and top up when they are nearing empty. It is up to us to do the heavy lifting, analytically,



Obviously, weight affects range and fuel burn. Everyone knows that. So there is an automatic assumption that it will be more economical for them to work down to flying light on fuel, and top up when they are nearing empty





with the appropriate Excel spreadsheets, and to show them that what we call the additional tankering costs of refuelling early, are more than offset by the discount that you are able to provide to them, thanks to the bigger uplift. In reality, the additional tankering cost probably adds around 8¢ to 10¢ per litre on a larger aircraft. However, if they are getting a discount of 50¢ per litre then they are still way better off buying the 1,000 litres from us. This is all about getting in there and initiating the appropriate discussions with the client, rather than just accepting whatever is going.

The relationship always starts somewhere and at some point in the conversation things will move in a direction that allows you to find the missing variables you need. Once you have something to work on you can figure out the equation for them and show them how they will benefit.

Actually, people are generally very eager to give you all the variables you need as a fuel manager. Working out the most efficient fuelling schedule is not a top priority task for them and they are only too happy to let you do it. They want someone else to do the legwork, then pitch them on the actual numbers. I'd usually make a whole new spreadsheet template just for this particular customer or this particular conversation. So they'd know why they would be switching in our favour and why it makes sense for them.

Of course, they know I'm an interested party, that I want them to take more gallons from me.

But if this can be shown to benefit their operation, then it is a better, more transparent decision for everyone involved. In reality, tankering costs are not a big deal but people bring it up because it is an extra variable to consider.

Q: Do you select just one fuel wholesale supplier or multiple suppliers?

A: We have Shell at Teterboro and Epic Fuel at Hayward. Obviously all the major suppliers are always competing and keen to talk about rates and transport. When it comes to resellers it is all about who you want to work with and who you want to have an exclusive contract with. We are both an FBO and a charter operator, so I have plenty of experience in both buying and selling fuel. I also have responsibility for all our 'on-the-road' refuelling purchases on the charter side. Many FBOs are not on both



sides of the game, so they do not see things from the charter operator's point of view and I think that definitely gives us an edge.

Q: How far has unbundling gone in the US?

A: We are definitely seeing more unbundling these days, but fuel is still king here. There is more of an à la carte menu, with a range of services unbundled from fuel and available as optional extras. As the years pass there is less and less by way of a 'complementary' service offering bundled in with the fuel price. These days too, operators are much more likely to get restive if they see bundled pricing. Many of them are challenging this and saying, "Why build things that I don't need into my fuel price?" We are very happy to accommodate them and to unbundle if that is the way they want to go.

Q: How do you decide what level of discount to allocate to a customer?

A: We monitor their fuel uplift on a monthly or quarterly basis and we give them a discount based on those figures. If they say, "Look, we are going to require 10,000 gallons a month, so what discount can you give us?", we'll also act on that. But we will be looking to them to hold up their end of things. If they are priced for 10,000 litres and actually drawing 3,000, then we have to have a conversation. The key is to have the tools to monitor the uplift across any particular operator's fleet over the period in question. There is nothing wrong with people buying 2,000 gallons a month, provided it has not been priced for 10,000 gallons.

The point is that every operator needs a bespoke solution, worked out just for them. I consider myself a problem solver and every new client's requirements are a new challenge that has to be figured out.

The main point is that you need to have a complete grip, all the time, on what is happening from an activity standpoint. You can be servicing the same 10 aircraft every month and doing 30,000 gallons a month, or you can have 30 aircraft a month flying in but all you're selling is 5,000 gallons. People think that the more planes you get visiting, the more fuel you are going to sell. However, it really is how effective you are at selling to each and every aircraft that adds up to the bigger picture. ■

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Flight planning in the palm of your hand

EVA talks to Jay Ammar Husary, Executive VP of UAS International Trip Support



UAS International Trip Support has continental headquarters in Houston, Johannesburg, Hong Kong and Dubai, with regional offices in Lagos, Nairobi, Beijing and New Delhi, along with station managers in 23 global locations. The company was founded in 2000 and is now one of the largest global trip support providers. Jay Ammar Husary, the company's Executive Vice President, has been with UAS from its inception.

Q: What was the founding idea for UAS? How did it all begin?

A: We wanted to start a company that would bring about a real step change in the way flight planning and trip support companies dealt with clients. The traditional approach has been to do the basics and a bit beyond, but much was still left to the client, particularly if they encountered any difficulties along the way.

All trip planning companies promise a complete hand-holding service for clients, but very few of them manage to deliver on that promise 100% of the time.

It was clear to us that by striving to deliver completely on that promise of providing a complete bespoke service for every trip for every client, we could create a company that would attract customers and that would be successful.

Q: It sounds like you took a very entrepreneurial approach to the business from the outset?

A: We were raised by our parents to think outside the box and to be entrepreneurial. At the age of six we were running lemonade stands and now we're running a major business. Today, 16 years after we launched, we're one of the largest independent flight support companies in the world for commercial airlines and for providing services to business aviation. ▶▶



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► **Q:** How much scope is there for a flight support company to offer services that go far beyond anything that a corporate flight department or an owner's own management company could achieve?

A: Clearly, operators who run a managed fleet on behalf of owners have to be able to facilitate whatever journeys the owner or charter clients want to make. Often this will be to destinations and airports with which the operator has no familiarity. Such a trip can and usually will involve a whole load of very specific procedures and requirements. For the operator to have to sit down and get on terms with all that needs to be done to expedite the flight

would be incredibly onerous if they did it for one owner, and the difficulty would grow with every additional request. They generally do not have the staff or the in-house expertise to solve these problems rapidly.

So it is much more sensible for them to rely on outside expertise. The crew's only concern should be how to get the principal smoothly and safely from A to B. All the pre-handling, logistics, security and risk management, along with a host of other services, such as obtaining overflight permissions and securing landing and departure slots, where required, should be left to an expert flight and trip planning operation. That's where we come in.

This year at NBAA, we launched a new technology platform called UAS Flight Evolution, an all-in-one planning and weather solution targeted specifically at pilots and dispatchers. In our view it will revolutionise the process of advanced global flight planning, weather checking and aircraft performance calculations, as well as raising the bar on in-flight situational awareness.

The product is built on a web- and mobile-based platform and provides all the tools required to navigate the most complex trip planning logistics with ease. We demonstrated it on our stand at NBAA and visitors found it powerful, intuitive, and user-friendly. It runs on a variety of smart phones and devices and can be used with or without a data connection.



UAS Flight Evolution provides instant access to flight plans, weather charts and procedures, and pilots with satnav communications capabilities in the cabin can see the aircraft's global position on a high-definition moving map. Moreover, the system combines the 3D map with synthetic vision capabilities, so hazards, special events and restricted areas are well defined on the screen.

The database on the device itself is very comprehensive - this is a technology that allows pilots and dispatchers to plan, review and execute missions with or without a data connection. A typical flight plan can be run in less than five seconds, and the mapping engine renders high-definition graphics without delays or the screen breaking up.

At the heart of the system is one of the world's finest flight planning algorithms and data sets. This truly is cutting edge technology that has never been seen before in the sector. Pilots have a three-dimensional view of their mission in the palm of their hand. Moreover, we are not stopping there, there are further applications planned! ■



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Time to get your adrenaline rush

New upset prevention and recovery training (UPRT) regulations don't start in the US until 2019, but they're already in effect for EASA commercial business aircraft operators. *Rick Adams* looks at some of the specialist training providers catering to the bizjet pilot market

The 'rush' you get when your aircraft stalls or rolls into a severe bank angle has a more academic term: 'adrenalised learning'. Adrenaline permanently etches such experiences in your memory, and it can be recalled in vivid detail long after the event. As Randy Brooks says, "Pilots will always remember their first spin." Brooks is Vice President of Training for Advanced Performance Solutions (APS), a specialist in upset prevention and recovery training (UPRT) with locations in the United States, the Netherlands, and Saudi Arabia.

Adrenalised learning "has the most profound and lasting effects on one's perceptions, psyche, and ability to perform in similar situations," Brooks explains. And it might be positive or negative. If that first experience occurs in an unstructured environment, the result can be fear and erosion of confidence. But "if that ex-

perience is provided in a methodical, controlled environment, the trainee will come away from it with a strong sense of accomplishment and confidence. The likelihood that the trainee will be able to perform the exacting physical movements required for recovery, though stressed, will be greatly improved."

I had the opportunity to fly with 'Random' Brooks in a UPRT demonstration at APS's Phoenix, Arizona headquarters, and doubt I'll ever forget the experience of looking straight down at the desert terrain after coming out of a chandelle manoeuvre. Or the thrill of flying inverted for a couple of minutes. I had no fear until we prepared to land and the controller warned of birds around the approach.

APS's UPRT courses are offered through the Saudi Aviation Flight Academy (SAFA) in Riyadh. SAFA advertises basic upset recovery training, professional pilot upset recovery training, standard emergency manoeuvre training, ▶





While upset recoveries should be trained to G-loadings representative of the pilot-in-training's aircraft, there is always the risk of exceeding these limits in the training environment

Randall Brooks

▶ and enhanced emergency manoeuvre training for fees ranging from 15,600 Saudi riyals - SAR (about US\$4,160) to 26,120 SAR (\$6,965). UPRT customers have included the Saudi Aramco flight department.

Captain William Roe, Managing Director at SAFA, who completed APS' train-the-trainer course, says: "I can verify that it provides transferable skills necessary to deliberately and safely prevent, and, if necessary, recover from aircraft upsets and stalled flight conditions applicable to a wide diversity of general aviation and commercial airplanes." Captain Roe's experience includes management and instructor positions at Dubai Aerospace Enterprise Flight Academy and Embry-Riddle Aeronautical University in Florida, USA. He is Chairperson for the International Association of Flight Training Professionals steering committee.

Pilots of commercial category business aircraft who fly into EASA member countries are required - as of 4 May 2016 - to go through UPRT during their recurrent training. If the aircraft you fly has 19 or more seats, upset recovery training must incorporate a full-flight simulator; below 19 seats, a simulator is required only if one is available for your type of aircraft.

Aircraft operators were expected to adjust their training curricula and have their programmes approved prior to 4 May. Instructors must have the required training and standardisation before they can deliver UPRT.

Daan Dousi, EASA Acting Manager, Aircrew and Medical Regulations Section, says the agency is working on updated regulations for flight simulation training devices (FSTDs) in anticipation of UPRT being required for all initial type-rating training beginning in 2019. The US Federal Aviation Administration (FAA) rules of stall and upset prevention/recovery training will also kick in then.

"We are following closely what the FAA is putting into place. So far we have not made a decision whether this should be trained the way the FAA is going to train or we might do it differently," Dousi says.

Definition of the 'extended envelope', all-weather operations, and an "inspector competency" framework are part of EASA's RMT.0196 Work Package 1, as well as a "gap analysis" showing differences with International Civil Aviation Organization (ICAO) Doc 9625, Edition 4, Manual of Criteria for the Qualification of Flight Simulation Training Devices - Volume

I: Aeroplanes. The manual was issued in 2015, six years after EASA's current FSTD guidelines were published.

A critical issue with extended-envelope training is the aerodynamic models to be used and how they are validated with flight test data and wind-tunnel testing. "One stall is not like the next one," notes Dousi. EASA may opt for generic training in a 'class' of aeroplane rather than requiring type-specific modeling.

EASA is leaning in favour of the use of an aerobatic aircraft with all-attitude, all-angle capability for elements of initial upset recovery training, as is recommended by ICAO and incorporated into their Multi-crew Pilot Licensing (MPL) airline cadet pilot training schemes.

APS Adds Speed Machines

APS is a strong believer in on-aircraft training, and has recently acquired two SIAI-Marchetti S211 jet trainers, both currently based in Arizona. The jets have been retrofitted with Garmin 3X Touch large-format advanced flight displays to more closely represent the corporate business jet or airline flight deck.

Advantages of the jet trainers, compared with APS's Extra 300L aerobatic aircraft, include "operating in a speed range of 250 knots or more" and "operating at higher altitudes" in air traffic control (ATC)-governed airspace, Brooks notes. He says the S211 is heavier, and therefore not as nimble, as the prop-driven Extra, and has different stall characteristics.

The S211 is a pressurised, 6000-pound, tandem-seat aircraft which can operate at altitudes up to 40,000 feet and speeds up to 0.6 Mach. It is capable of structural loads of five positive Gs or two negative Gs. Brooks remarks, "While upset recoveries should be trained to G-loadings representative of the pilot-in-training's aircraft, there is always the risk of exceeding these limits in the training environment." Also important is "the ability to emulate aerodynamic characteristics encountered in real-world upset events such as swept-wing stalls and at high altitude." He noted that all standard (low) APS UPRT profiles can be done in the S211 in visual flight rules (VFR) airspace between 10,000 feet mean sea level (MSL) and below Class A airspace where the 250-knot air-speed limitation is not applicable. ▶▶



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The recovery techniques you learn in (an aerobatic aircraft) could be and likely are completely inappropriate for a Gulfstream or a Falcon or an Embraer, and could actually tear the airplane apart

Dann Runik

▶▶ “To fully expose a pilot to the entire altitude and performance envelope of an aircraft, a fully aerobatic aircraft is required,” Brooks believes. “The ability to fly into, and recover from, the full 360-degree range of roll and pitch, the ability to do full stalls, and the ability to encounter relevant upset situations for realism is ideal.”

APS’s training curricula include classroom and simulator training, as well as the on-aircraft component, but it cautions: “Simulators lack the ‘reality factor,’ fear of dire consequences, and sense of urgency.” Brooks explains: “A pilot who is afraid to be overbanked in his or her aircraft will also experience a similar degree of ‘startle’ and ‘shock’ when encountering inverted attitudes, even in a fully qualified, safe, and aerobatic-capable UPRT aircraft platform. The pilot will not, however, be nearly as apprehensive of the same environment in a simulator, if apprehensive at all.”

“Due to the incapacitating nature of the real-world airplane upset psychophysiological condition of the pilot, conducting on-aircraft training as early as possible is essential to enable a pilot to develop the mental discipline and technical skills to overcome fear and panic, to react effectively in the face of startle and

surprise events, and to learn to think clearly while applying recovery principles in an actual aircraft,” Brooks adds.

FlightSafety Prefers Grounded UPRT

FlightSafety International, the leading provider of business aircraft training, now offers UPRT capabilities on several of its full-flight simulators: Cessna CJ3, Gulfstream GV, G450, G550 and G650, King Air 350 and Pilatus PC-12. Dann Runik, Executive Director, Advanced Training Programs, states that the courses, “exceed EASA requirements, are aircraft type-specific and include manufacturer-approved techniques and procedures for recovering from upsets due to aerodynamic stall, as well as high-speed/mach events well in excess of the certified maximum speeds.” The aerodynamic, flight control and simulator motion models developed in collaboration with the OEMs include low speeds that replicate full aerodynamic stalls and extreme high speeds beyond VMO (the maximum airspeed at which an aircraft is certified to operate) and beyond MMO (the maximum operating Mach number of an aircraft).

However, FlightSafety does not think on-aircraft training is necessary for upset training.

Runik suggests there is potential for negative transfer of training – “The recovery techniques you learn in (an aerobatic aircraft) could be and likely are completely inappropriate for a Gulfstream or a Falcon or an Embraer, and could actually tear the airplane apart.” He also cites the difference in controls “with a stick between your legs in an aerobatic-style airplane that’s often way different than a yoke in your left hand and throttles in your right hand. So there’s a muscle-memory problem, and how do you transfer that to a different aircraft?”

“The ability to do this kind of training very low to the ground showed us that anything to be gained in the aircraft doesn’t outweigh the danger of going up in an aerobatic airplane and maybe having something go wrong and actually dying from it,” Runik concludes.

FlightSafety trainees are presented with several unannounced upset scenarios, all based on real-world accidents that killed pilots and passengers. “For the most part, they will crash in two or more of the scenarios,” Runik relates. “The simulated airplane will violently depart controlled flight. You’ve got about three seconds to recover correctly or it will get into a deep stall that may or may ▶▶



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EASA Learning Elements - PREVENTION	
A.	Aerodynamics
B.	Causes of and contributing factors to upsets
C.	Safety review of accidents and incidents relating to
D.	g-load awareness and management
E.	Energy management
F.	Flight path management
G.	Recognition
H.	System Malfunction
I.	Manual handling skills

EASA Learning Elements - RECOVERY	
A.	Recovery from developed upsets
1	Timely and appropriate intervention
2	Recovery from Stall Events Take-off configuration Clean configuration, low-altitude Clean configuration, near max operating altitude Landing configuration
3	Recovery from nose high at various bank angles
4	Recovery from nose low at various bank angles
5	Consolidated summary of aeroplane recovery techniques

Graphics courtesy Sunjoo Advani, IDT

techniques to our customers," says Nick Leontidis, CAE's Group President, Civil Aviation Training Solutions.

LOFT Flight Simulation Center in Carlsbad, California USA, promotes itself as the "only on-aircraft jet and Level D simulation facility at a single location (KCRQ McLellan-Palomar Airport)". The Level D simulator is a Lockheed Tristar L-1011 model; LOFT also has a Level C Citation Jet full-motion simulator. Its on-aircraft UPRT training is conducted in a Czech-built L-39C Albatros jet trainer and a Cessna CE525.

The Ultimate High Academy, based at Goodwood Aerodrome in Chichester, West Sussex, UK, offers a three-day, six-flight All-Attitude Recovery Training (ALART) package, featuring a T67M260 Slingsby Firefly, Cessna 172 Skyhawk, and Extra 300. The charge for the course is £3,445 (\$4,340) plus VAT. Its pre-course computer-based training was developed in conjunction with Bristol Groundschool. Ultimate CEO Mark Greenfield, who ran the Empire test pilot school for QinetiQ, was also a risk manager for a couple of major investment banks.

Calspan Aerospace's upset recovery training has its roots in a NASA-sponsored 2001 study of training efficacy in prevention of loss-of-control inflight (LOC-I) accidents. Using a Learjet, Calspan claims it is the only in-flight provider of UPRT that can simulate flight control malfunctions through the use of in-flight-simulation technology, declaring: "Our unique variable stability Learjets, which simulate the handling qualities of larger jets, are programmed to demonstrate an aircraft upset or malfunction." Calspan's flight training operation is in Niagara Falls, New York USA.

TAG Global Training announced in July its UPRT fundamental theoretical knowledge e-learning course, Part 1, with Parts 2 and 3 to come, according to Debbie Elliott, Training Manager.

Several business aviation insurance companies are aligning with upset training companies, offering to pay for some of the training or reduce premiums for operators whose pilots complete such training. These include Calspan with Global Aerospace's SM4 Safety Programme, US-AIG and APS, and SwissRE with APS and CAE, among others. ■

▶ not be recoverable, which is exactly like the airplane."

"On their second attempt, they get it right," Runik tells me.

As the regulations come into force, more companies are offering UPRT courses. CAE, the second-largest provider of bizjet training (including the Emirates-CAE Flight Training Centre in Dubai, which recently added a Gulfstream

G650 Level D simulator in its new 7000XR design), has updated its upset training curricula to meet EASA requirements. CAE's programme includes ground school, simulator and in-aircraft training through APS as its partner. A focus of CAE's UPRT update has been on flight instructor training. "We felt it was extremely important to make sure our instructors are properly prepared to teach the appropriate procedures and

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Booking ahead

Andy Hudson, CEO of down-route, talks to EVA



A few years ago, Andy Hudson, who was then CEO of charter broker company, Private Jet Central, opened discussions with a hotel booking chain. Hudson had an idea for a room and expenses booking system tailored precisely for the needs of the business aviation sector and wanted to find a way of linking up with the mainstream hotel booking aggregator services. The idea was to leverage the buying power of the major aggregators of hotels, to provide the pricing and the hotel database that his new product would require.

“Initially I was looking for a way of getting the hotel booking company a toehold in business aviation. My charter broking company had



recently begun providing aircraft management services and we knew all about the complexities of securing crew bookings when a flight was going to take an aircraft away from its home base for one or more days," Hudson reflects. The more the idea was discussed, the clearer it became that what was actually required was a software product that did not yet exist.

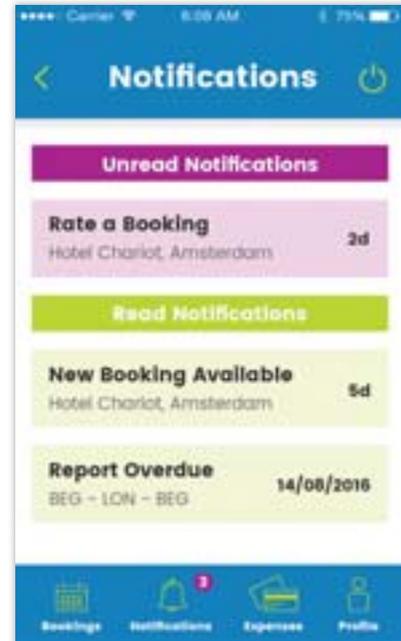
"We soon realised that ideally, what was needed was a combined crew expenses and booking service," Hudson recalls. One of the perennial problems every operator faces when he or she is managing an aircraft for an owner is the need to meet the bills that the aircraft is generating today on its flight, and to accept that they will be out of pocket until the crew arrive back and present all the receipts. Only then can a proper, receipted invoice be prepared for the owner.

Of course, the operator could always ask the owner to pay a lump sum up in front that can be drawn on for en-route expenses. However, most operators would rather not test their relationship with the owner in this way and would rather simply provide a service and stand being out of pocket until they are reimbursed. However, they all have a natural interest in keeping that out-of-pocket period as short as possible.

The beauty of the product that Hudson was envisaging was that the operator would get all relevant receipts delivered back to them by the system virtually as soon as they were being incurred by the crew. The owner could then be billed that much sooner, and certainly well before the crew arrived back with all the physical receipts, thus enabling the operator to reduce their out-of-pocket window.

"What we came up with was a product that could kill at least two birds with one stone, and that would be absolutely free for the operators. It would manage all the expenses and would simplify room bookings for crews on away-from-base trips. The application would also give the operator a much greater measure of control – if they so wished – over room budgets, the kinds and brands of hotels that could be booked, distance from the airport, and so on," Hudson explains.

Expenses outside the system, such as when the pilot pays for fuel on a fuel card, could be caught simply by the pilot choosing an option ▶▶



What we came up with was a product that could kill at least two birds with one stone, and that would be absolutely free for the operators



Lance Reck

▶ from a drop down menu on the app on his or her smartphone or tablet, and then photographing the receipt. The instant the photo is saved it is immediately sent through to the operator.

With plenty of ideas for the new booking and expense app, Hudson started to put together a new team. He chose Jerry Saddington, Head of Marketing at his charter operation to be Chief Marketing Officer, Andy Baker Chief Commercial officer and a technical software expert, Lance Reck, an old friend of his, to be the new company's Chief Technology Officer (CTO). With Reck, Hudson proved the truth of the old adage that while it is good to be talented, it is equally good to be lucky! Getting a top-flight CTO to work for a small start-up is not an easy sell. However, Hudson and Reck had worked together in the mid-2000s on a banking authentication application and knew each other well from those days.

"The banking application went very well but once the banking crash happened in 2008 it was dead in the water. At the time I went back into business aviation and founded Private Jet Central while Lance became involved in other projects. We kept in touch every year or so and when this came up, I knew I wanted to get him on board," Hudson explains.

In the end it was a fairly easy deal to per-

suade Reck to join and handle the development of Hudson's new project, which now officially became known as 'down-route', with its own company and team, completely separate from the charter brokerage business. The application has a huge potential client base in business aviation and can then be cloned to other industry sectors - but more of that in a moment.

Reck worked hard on the beta version and inside 8 months has been able to pull the product together to the point where down-route now has more than 80 operators signed up, and at the time of writing was about to begin beta testing.

"How it works is that an operator goes to our site and applies to register. We have some fairly rigorous checks to ascertain that they are indeed an operator. The site on-boarding process will ask for their AOC, and if there are any difficulties in the site registering them automatically, the application gets passed to our staff for manual checking and verification," Hudson explains.

The reason for the careful vetting process is that down-route has specially arranged pricing on some 800,000 properties around the globe and it wants to keep access to these properties restricted to its target audience. "We accept companies that are affiliated to business

aviation, such as a business aviation catering company, for example, that might not have a biz av-sounding company name. But that kind of application would fail the on-site registration and would have to be cleared manually by our team," he notes.

Version 1.0 of the system that launched in November has the photo-supported expenses claims component. However, the next release of the software will include optical character recognition which will allow all the expense details to be stripped directly of the photo of the bill in text form. This will do away with duplicate re-keying at the operator's side, and the system also enables the pilot to check to see that the OCR system has interpreted the bill correctly before sending it back to the operator.

Monthly bookings should grow substantially once the company begins to include additional vertical markets. "We had a very interesting visit to the Fort Lauderdale Super Yacht show recently. Both ship builders and owners and operators were very interested in a down-route product tailored to their industry. We have also had very good discussions with the maritime sector. This really is a business that can grow and grow, and provide a tremendous service first to the aviation sector and then to other verticals," he concludes. ■

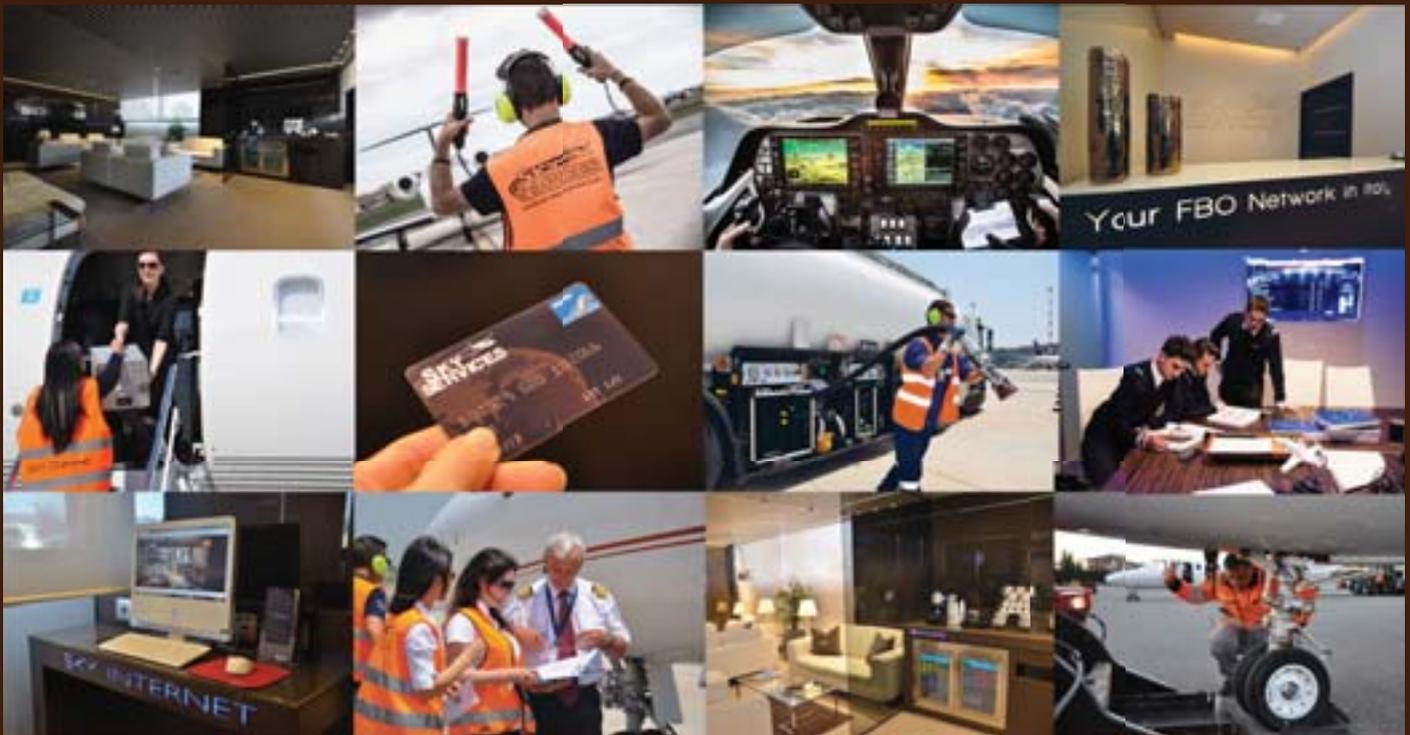


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Future gazing: not all gloom and doom

EVA talks to Jetcraft President Chad Anderson about the company's latest 10-year forecast

Jetcraft's second 10-year market outlook, going out to 2025, could be fairly summed up in two words, 'subdued growth'. The appropriate emotional response would be "Ohhhh... Yay!" After all, growth is growth, and where there is growth, even subdued growth, a resilient, resourceful sector – and business aviation is nothing if not that – will find a way of making a profit and staying healthy.

Besides, forecasts are just forecasts. Things could turn out a lot better than that – or a lot worse, take your pick. Me? I'd opt for "wait and see..." These are uncertain times, with global monetary policy dominated by unprecedented central bank interventions, and with massive macro-economic forces in play. Good luck predicting how the confluence of all these factors will turn out 10 years hence.



What is clear is that the executive summary to Jetcraft's forecast should be mandatory reading for anyone remotely interested in business aviation. I'm highly tempted to reproduce it in its entirety, but hey, it can be Googled in an instant so no need...

Jetcraft probably sells more pre-owned business jets than anyone else on the planet and has an amazing worldwide informal intelligence network. The key finding in its forecast, summed up in the foreword to the forecast by Jetcraft Chairman Jahid Fazal-Karim, is that by 2025 we can expect to see fewer jets sold, for less money, than Jetcraft anticipated in last year's 10-year forecast.

The company's 2016 market forecast calls for 7,879 unit deliveries, worth US\$248 billion in 2015 money, to be realised over the next decade. Last year's forecast had predicted 8,755 aircraft deliveries worth



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▶ \$271.1 billion, giving us around a 10% shrinkage in units and an 8.5% reduction in cash generated. Not great, but not exactly a total disaster either... unless the next few years see a similar steady downward revision in units and cash. Perish the thought...

Q: To start with the present, how has 2016 been for Jetcraft so far?

A: As a company we are ahead of what we were doing last year, which was a record-breaking year for us. Already we are up by 10 to 15% in unit count and at the pace we are going, by the end of the year we will be ahead of last year by the same amount, 10 to 15%, in revenue terms as well.

Q: What changes, if any, are you seeing so far in 2016?

A: The deals are definitely getting more sophisticated, but the real benefit for us this year is that there are predictable deals to be done and there is plenty for us to work on. What is making these deals more sophisticated is that for the most part the buyers are current owners. So to buy a new Global or a new Gulfstream 650, they are coming out of another product. No one likes down time, so you have to structure the deal in a way that allows them a more or less seamless transition.

Q: Are people prepared to take hefty discounts when they are moving away from a

jet that they have bought inside the last five to 10 years?

A: There is depreciation of course, when you are trading in a pre-owned aircraft against a new aircraft. But you have to remember that anyone selling a pre-owned aircraft today probably purchased it somewhere around the 2010 to 2012 time frame, and that was after the significant value decrease in 2010. So the aircraft have depreciated quite a bit, but they are also getting a lot more for their money. The new aircraft are bringing so much additional value in all the innovations, new technologies and improved life cycle costs, that there is enough there to

make the owner comfortable with his or her new purchase.

Today we see a large number of ongoing trades out there. The product mix that we are seeing is very much still dominated by the larger, longer range aircraft.

Q: Are you seeing sales predominantly from US buyers?

A: By no means all of our orders are coming from the US. About 50% of our transactions this year have been US-based and if you take some of our peers in the industry, the percentage of US-based trades would probably be far higher. Our bright spot, by way of contrast, has been Asia, where we have had 20% of our results to date, a surprisingly strong proportion, really. Europe has not been bad. It has contributed around 16 to 17% of our results, which is consistent with the numbers we put out in our forecast.

Q: How do you view India in terms of potential demand?

A: India definitely has a strong enough economy and enough high net worth individuals and strong companies to be a very interesting source of future demand for business aviation aircraft. However, today there are just too many bureaucratic issues and too many obstacles in the general operating environment for business aviation to thrive there. It is a very substantial region, but it is still in the 'wait-and-see' category. ▶▶



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▶ However, Asia as a whole is very interesting. China chilled off with the austerity measures and anti-corruption measures where people got nervous about anything that looked like extravagance. But there are a lot of very good users and buyers of aircraft outside of China and there is still a strong demand for large lift. Overall, our results from the region are improving, and we are seeing a mixed demand for pre-owned and new aircraft. But much of this is coming from outside China, from places like Indonesia.

Q: What are you seeing in the light jets market?

A: I think you are going to see some improvement in this market based on the new products that are coming to market through the period covered by our 10-year forecast. Light jets still comprise around 15 to 20% of our business. Not everyone needs big aircraft. Everyone starts somewhere and light jets are a great starting point. They often lead on to the purchase of larger aircraft so they are very important to the whole sector.

The key here is that it is very hard to go backwards. Once someone starts off with a light jet in business aviation, they do not tend to return to scheduled airlines. You don't see a whole lot of people pulling out of business aviation. We've got HondaJet coming along, plus the Pilatus PC-24, Embraer's Phenoms and Textron's M2 and their recently announced single-

Today there are just too many bureaucratic issues and too many obstacles in the general operating environment for business aviation to thrive there (in India)

engine turboprop. All this will create some additional excitement in the light aircraft sector. These are efficient, technologically advanced products and will help to improve the health of the sector.

Q: How much excitement do advances in avionics generate?

A: As a pilot myself, for those of us in the front of the aircraft, avionics are very exciting. There is so much new technology out there now that is very intuitive for pilots to use. There are also some advances in regulatory requirements that are making life easier for the pilots. They can now text with aircraft traffic control to get clearances – all this is going to make aircraft safer in the long term.

From a sales perspective all this is a boost as well. Some aircraft are just not going to be a sound economic proposition to upgrade to the latest avionics. If you are going to upgrade the cockpit in those aircraft, it is going to make more sense to put that investment into a new or

upgraded pre-owned aircraft. So all this helps to create transactions.

Where people have not replaced their aircraft for the last five to seven years, they tend to start to feel the need to upgrade. Many have been waiting and postponing buying while they waited for global markets to stabilise. Technological advances help to push things along and we are seeing numbers of them coming off the fence now and looking to buy.

Q: US companies have been cash rich as far as their balance sheets are concerned, for some time now. Do you see that helping aircraft sales?

A: In general North American clients are very cash rich. For a long time, from 2008 onwards, they tended to use the cash to buy stock back or to reinvest in their company. Purchasing aircraft or refreshing their fleet was not a high priority for many US companies and operators. So now they've done a great job with their businesses and they have moved on to focus on equipment purchases that will help them achieve their longer term objectives. Business jets fall into this category.

We are now seeing big, healthy US companies finally saying: "I can't wait any longer to replace my fleet. Now is the time." That tells us that the market is sound and is going to get healthier in the medium to longer term. Also, it seems clear that we will see larger and longer range aircraft taking the largest market share of new aircraft. Looking at the new models coming through from the OEMs they are clearly heavily focused on the larger cabin market, which is consistent with the demand that we are seeing.

Q: Are these new models coming into a saturated market or do you see them generating fresh demand?

A: New models will naturally create turnover. There will be some new buyers, but many existing buyers will be looking to upgrade. New models generate excitement. Of course, you want to make sure that you do not oversupply any one market segment. That creates all kinds of pricing issues. However, overall, we are seeing a very reasonable product turnover plan from the various OEMs, so I think things will be pretty balanced over the next 10 years. ■



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Jewelling up the aircraft



Anthony Harrington talks to Lilou 'Water Jewels' founder and designer Brenda Lois, about her astonishing transformation of even the most sumptuous bathroom on a business jet

Q: When I first heard about an Italian jewellery firm 'prettying-up' the humble bath tap, I had no conception of just how gorgeous your creations would turn out to be. Whatever inspired you to turn your design talents to taps?

A: Well, I am first and foremost a fine arts painter so I tend to have a good eye for colour, form and beauty. One day I was relaxing in my bathtub surrounded by my beautiful candles and oils and magic potions when I noticed the tips of my toes coming out of the water pointing to a very ugly tap and I thought, "You

know, taps do not have to be ugly. There's no rule that says that!"

So I decided to work with Guiseppe T., (he really does prefer just 'T'), a master goldsmith from Valenza Po in Italy, and we went on a fanciful flight to transform taps into works of art. Guiseppe understands everything about jewellery crafting. What we have managed to produce, I believe, is some superb examples of Italian design featuring old world Roman craftsmanship in the finest tradition of Italian jewellery-makers. We were delighted that Lloyds of London has designated our 'Water



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Jewels' as instances of 'fine art', for insurance purposes.

Q: They look sumptuously made. On aircraft weight is a factor but I presume they can be plated as an option, instead of being solid gold or silver?

A: Absolutely. Our 'Water Jewels' are unique. They can be crafted from 23kt. Gold and platinum plating or be solid gold, whatever the VVIP aircraft owner wishes. They are each hand-set with genuine gemstones or Swarovski crystals, whichever is desired, according to the client's taste and budget.

We are also able to take into account the various colours, textures and motifs of the aircraft's master suite and can pick up themes and styles, as desired. Our aim at Lilou is to make our 'Water Jewels' the Piece de Resist-



ance in any environment in which they are displayed. Each piece that is made with Noble materials is presented with an official Design Patent, and is registered in the name of our client with the Italian Patents Office, Ufficio Brevetti.

In addition to the taps, we also design a whole range of accessories, from the door handle and key hole to the master bathroom or suite, to jars and containers.

Q: What is next for Lilou?

A: We have had such interest shown for our 'Water Jewels' that we are now branching out to offer VVIP business jet owners custom crafted display objects for their jets. This really does open the way to designing and crafting the most eye-catching and gorgeous sculptures and objects d'art for our clients. ■

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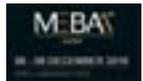


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EVA talks to Aiham Bader, Founder and CEO of Click Aviation Network

Aviation in a connected world

Q: What was the inspiration for founding Click?

A: Today, everything is connected. You have a GPS satellite that talks to your car and even your phone. This connectivity is changing the way everyone does business.

Building a business from the ground up takes the right people backing you up all the time, so what we're doing at Click Aviation Network is revolutionising the aviation business through end-to-end control of the value chain. We are in a sense unifying the skyways.

We are introducing a single unified approach to aviation where players operating in the aviation sector – from Charter Brokers, Operators, Suppliers and other service providers – can come together under one roof, explore business opportunities and enable ways to increase efficiency, explore opportunities for business growth, eliminate risks, enjoy operational consistency, reduce costs and build credibility.

Steve Jobs famously said that his task wasn't to give people what they said they wanted; it

was to give them what they didn't know they needed. Evolving technology and emerging customer preferences offer a real set of completely new opportunities for the aviation industry. By collaborating with the right set of partners, companies can forge better relationships with customers and improve their financial performance in a sustainable way.

Q: This is a very multi-sided, complex arrangement in which Click seeks to enable relationships and business opportunities to be explored between very different types of organisation. It sounds like this is both an IT platform-driven solution, a kind of shared procure-to-pay IT system, as well as having some of the features of an IT marketplace, where different vendors, with different services to offer and different procurement requirements, can meet and agree prices and terms. Is this correct?

A: To begin with, we bring in a wealth of industry experience and commitment to the ▶



We collect and process data into information that leads into knowledge. We manage the knowledge and share it across the network

▶ business of forging innovative change. Working with us gives players in the aviation sector access to the resources, people and time that are necessary to understand and tackle challenges they rarely have the resources to do.

We have built a strong global network of relationships. We have secured resources that will give members the advantage to stay above the competition. Our designated Commercial and Vendor Relations team work closely with on-ground suppliers to secure the most competitive prices available whilst ensuring that the reduced prices do not hinder quality. We have in place quality metrics, quality checklists and process improvement plans. Furthermore, we regularly run quality audits and process analysis in order to update and improve our quality plans.

A platform such as ours that empowers the framework between the network members is merely the starting point. We collect and process data into information that leads into knowledge. We manage the knowledge and share it across the network.

Q: What specific benefits are there for operators, brokers and others?

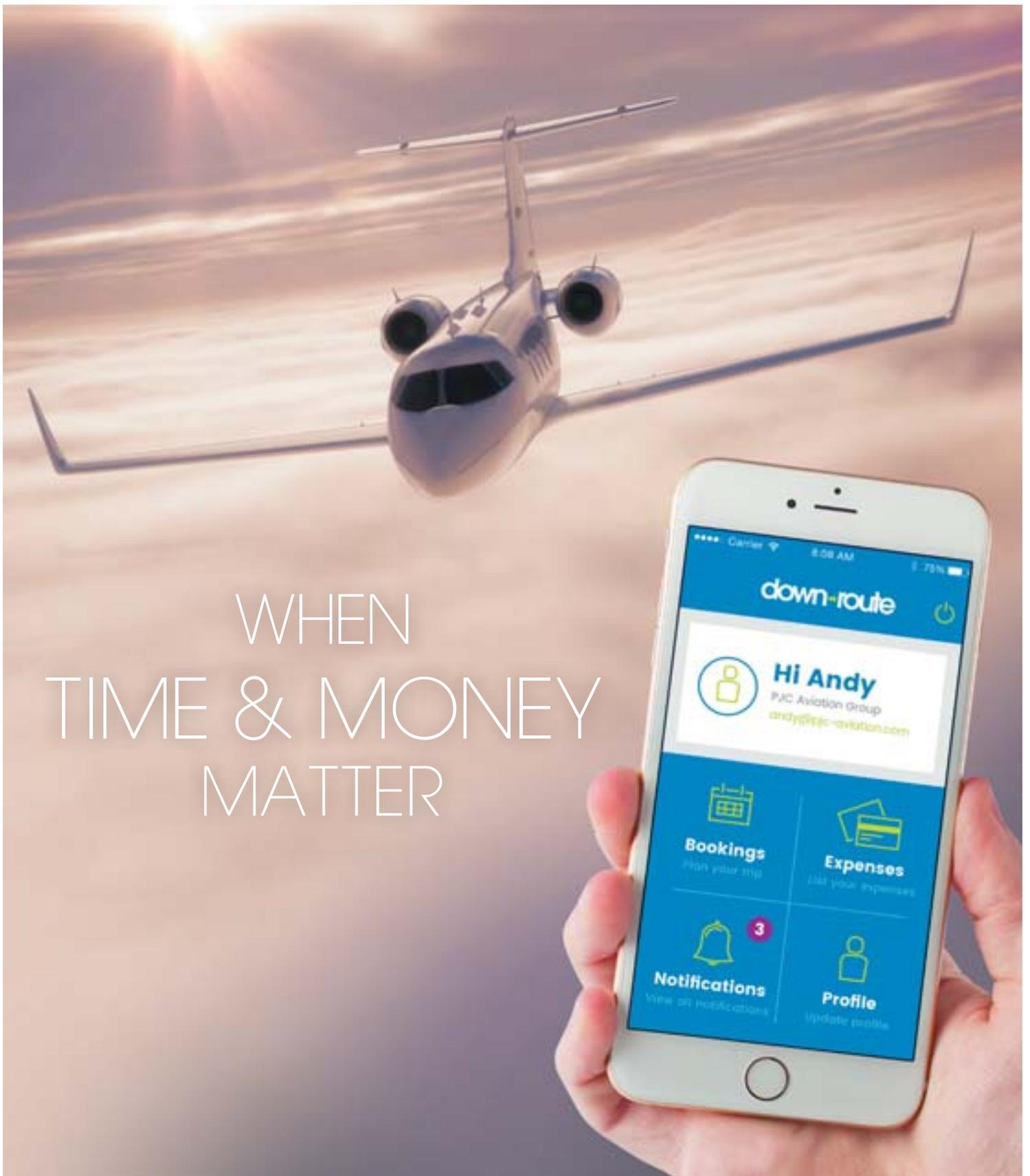
A: If we take an operator, for example, the Click Network gives them the ability to manage their aircraft, crew profiles and documentation via our web-based system. At the same time, they can showcase their capabilities and aircraft availability to all the brokers on the network and can forge specific and unique relationships with individual brokers via a secure and private portal that is unique to them. They can have the same direct connectivity with their suppliers by inviting them to connect to their portal on the Click network. Naturally, this gives them the ability to monitor and manage all service requests, including flight planning, refuelling, ground handling and catering, as well as tracking aircraft progress around the globe.

For suppliers, it enables them to list and showcase all the services they can provide to operators, together with the associated fees, and the locations that they can service. It also enables them to process service requests direct



from the operator or via Click's own operations control centre. The system makes it simple for suppliers to generate and submit invoices directly from operator orders, as well as giving them the ability to provide updates on the progress of all requests.

It is important to realise that Click's Operational Control Centre (OCC) is itself an important source of value add for our members, whether they are operators, brokers or suppliers. The OCC's overview of the network enables Click to provide members with data analysis, business intelligence reports and market forecasts, as well as ensuring that all quotations provided across the network are competitive. The OCC is also a fully-fledged trip planning operation and is well positioned to provide timely overflight arrangements and landing clearances, PPRs and slots, all with a clear view of the relevant regulatory and/or political requirements for the various missions. ■



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The image shows the interior of a luxury aircraft cabin. The walls are covered in vertical wood paneling. In the foreground, there are two rows of grey leather seats with a diamond-quilted pattern on the backrests. A wooden table with two cup holders is positioned between the seats. To the left, there is a wooden bench seat. The ceiling is white with recessed lighting and an "EXIT" sign. The overall atmosphere is one of high-end craftsmanship and luxury.

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