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Ashley Longshore

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Artist Ashley Longshore in her New Orleans studio. Photo by Paul Costello.

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BY EMBRAER



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- Brian Johnson, Senior Executive Advisor, Michels Corporation
Watch Brian’s story and request more information at
EmbraerExecutiveJets.com/Brian



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FEATURED CONTRIBUTOR

MARK EVELEIGH

Eveleigh was originally lured to Spain's Pamplona by the words of Ernest Hemingway, but he fell in love with the city and stayed for 10 years. He still returns regularly and he jumped at an opportunity to cover one of Spain's most fascinating little-known spots for **Business Jet Traveler**.

A globetrotting travel writer for more than a quarter century, Eveleigh has contributed to approximately 80 publications, including *Esquire*, *CNN Traveler*, *National Geographic Traveler*, and numerous inflight magazines. He led the first expedition of foreigners into Central Borneo's "valley of the spirit world" while researching his book *Fever Trees of Borneo*. He also trekked through northern Madagascar with a zebu pack-bull, a journey he recounted in the book *Maverick in Madagascar*, which *National Geographic* published.



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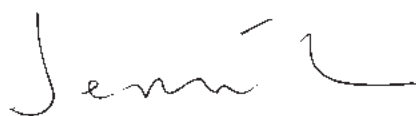
Up Front

I confess I was not familiar with Ashley Longshore—the vibrant artist featured on this issue’s cover—before Margie Goldsmith proposed interviewing her for **BJT** (see page 14). When I first glanced at the transcript of their conversation, I was struck by Longshore’s fearlessness: she seems to always say exactly what she feels—and with no filter. I admired her forthrightness, but I also worried about how some of her comments would come across—especially her frequent use of expletives.

Four-letter words are pretty common in conversation these days, but we have never been faced with this many of them in an interview slated for publication, and we deliberated about what to do. Coincidentally, just as we were considering this question, the *New York*

Times ran a major piece about Longshore. The paper chose to eliminate all the curse words, stating, “Sprinkled with phrases too salty for a family news organization, Ms. Longshore’s conversation is a performance in itself.”

It is indeed—which is why we decided against doing what the *Times* did. Instead, we opted to leave enough of Longshore’s language intact to convey her personality. But we also enlisted a whole lot of help from asterisks.



Jennifer Leach English
Editorial Director
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More Awards for BJT

I’m pleased to announce that **Business Jet Traveler** has won a 2018 Magazine of the Year Top 10 Award for Overall Excellence from the American Society of Business Publication Editors—an honor we received in 2011, 2013, and 2016 as well. Also this year, the ASBPE judges recognized **BJT** with national and regional Bronze Awards for Best Front Cover Design, national and regional Gold Awards for Best Regular Contributed Column (Taxes, Laws, and Finance, by Jeff Wieand), national and regional Bronze Awards for Best Regular Contributed Column (Outdoor Adventures, by Thomas R. Pero), and national and regional Gold Awards for Best Product Section/Department (Used Aircraft Review, by Mark Huber).

BJT has now won a total of 68 awards in 10 journalism competitions. It is an enormous privilege to be able to work with such a talented team of editors, writers, designers, and production managers. —J.L.E.



On June 21, **BJT** once again hosted readers at a National Business Aviation Association regional forum in White Plains, New York. Here, Jennifer English greets guests with AIN Publications director of finance Michele Hubert (left).

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A Pub Crawl with a Twist

In Australia's vast Northern Territory, grabbing a drink with your mates can be complicated. When your favorite pub is 70 kilometers away on a tiny island in the middle of a river, a little creativity is in order—and companies such as Airborne Solutions and Pterodactyl Helicopters have stepped forward to provide it. Both offer the ultimate in designated drivers via helicopter tours that include stops at assorted far-flung pubs.



Airborne Solutions' Heli Pub Tours depart from Darwin, the territory's capital and largest city. "The idea came through one of the pilots we employ, who was a former publican," says Clinton Brisk, the company's managing director. Though Brisk was skeptical at first, the idea of a helicopter pub crawl quickly took off.

Customers on the full-day tour spend a little over two hours in the air and touch

down at five outback pubs, usually raising a few eyebrows with each dramatic arrival. "At the Darwin River Tavern, we land right in the beer garden," says Brisk. "It's quite a surprise for the people having a drink."

There's more to the day than cold beers. Flying above the rugged Top End coastline, across abundant wetlands, and over the croc-infested Adelaide River, passengers often see nesting turtles, buffalo, and brumbies (wild horses).

"Our guests have a pub crawl in mind," says Brisk, "but when they take off and the Top End opens up in front of them it's a whole different experience."

Airborne Solutions' full-day helicopter pub tours cost AU\$790 (US\$583) per person for three people; larger groups can be accommodated using multiple helicopters. At Pterodactyl Helicopters, which also offers wine tours, pub crawls begin in multiple locations and prices start at AU\$995 (US\$735) per person, which includes lunch and one beer per venue. That's the drink limit, according to the company, whose website advises that "safety is paramount...it's more about the experience [than the alcohol]."

—Lauren Fitzpatrick

QUOTE UNQUOTE

"That may sound heavy [a reference to the half-a-million-pound weight of the under-development Stratolaunch aircraft]. But remember that [it] is the world's largest plane by wingspan, measuring 385 feet. By comparison, a National Football League field spans only 360 feet."

—Jean Floyd, chief executive at Microsoft cofounder Paul Allen's Stratolaunch Systems



CHARLIE PALMER STEAK NAPA

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(707) 819-2500, charliepalmersteak.com



Located in the new Archer Hotel in California's Napa Valley, Charlie Palmer Steak offers a refined ambiance and awesome steaks. The smart and rather large dining room presents shades of taupe and brown, and raw stone.

For starters, try the "pig ear" pad thai, with spicy peanut, cilantro, and lime; seared Hudson Valley foie gras with strawberry, rhubarb, pistachio, elderflower, and pain perdu; or the selection of oysters on the half shell. For mains, steaks are centerstage, with nine selections. On my visits, I've enjoyed the rare Snake River Farms strip and the tender bone-on ribeye with red wine natural jus. Yet the roasted Superior Farms lamb rack with farro risotto, spring peas, serrano, and mint jelly gives the steaks a run for the money. Fine sides include creamed spinach, truffle with bacon-spiced twice-baked potato, Brussels sprouts with coriander, and crispy fries with chipotle aioli.

For dessert, try the peanut butter terrine, with bananas and curried, candied peanuts. (Elvis would've loved it!) The wine list is extensive, and there's also an ample by-the-glass beer-and-wine menu. The waitstaff can get a bit overworked but they remain friendly and professional.

Charlie Palmer Steak—which also has locations in New York, Washington, D.C., and Las Vegas and Reno, Nevada—is a welcome addition to the Napa scene.

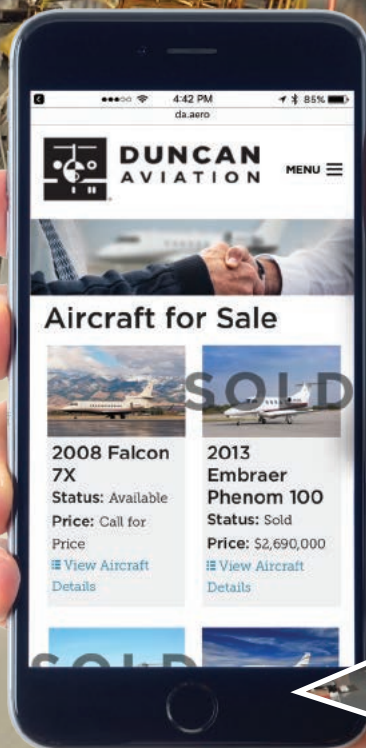
—Bob Ecker



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SUSAN J. STICKLE

An extraordinary equestrian event

In western North Carolina’s horse country, the historic small town of Tryon and surrounding communities are about to be put on the global map. The FEI World Equestrian Games, which will take place here from September 11 to 23, are expected to draw 500,000 spectators. That would be the highest attendance figure for any sporting event in the U.S. this year.

About a thousand athletes and 1,500 horses from more than 70 nations will compete in eight equestrian disciplines at Tryon International Equestrian Center in Mill Springs. Spectators will see elegant movement and skilled performance in dressage, para-equestrian dressage, and vaulting, which has been described as gymnastics on horseback. The disciplines of jumping, reining,

eventing, carriage driving, and endurance (considered the marathon of equestrian sport) will show a mix of high-octane sport, fitness, and technique. In addition to the competitions, exhibitions, trade booths, and games will highlight the enduring connection between horses and humans.

The quadrennial Games have previously been hosted in Sweden, the Netherlands, Italy, Spain, Germany, Kentucky, and most recently, France. A premier venue well prepared for this year’s influx, Tryon International Equestrian Center is in the foothills of the Blue Ridge Mountains near Asheville and Charlotte, North Carolina, and Greenville and Spartanburg, South Carolina.

For event ticketing, hospitality, and lodging, visit Tryon2018.com. —Ann Yungmeyer

Tiny Scenes, Huge Exhibit

Jonathan Swift wrote about a miniature world, but Gulliver’s Gate actually created one. The largest interactive museum of its kind, it opened last year just off Times Square in New York and features more than 300 built-to-scale scenes from dozens of countries—complete with trains and cars that move, ships that sail, balloons that float, waterfalls that tumble, and airliners that take off and land. In addition to such landmarks as the Great Wall of China and London’s Big Ben, the \$40 million, 50,000-square-foot museum offers fantasy displays such as Thor’s Mountain, which flashes blue thunderbolts from a cloud.



Visitors can use a full-body scanner and 3D printer to create miniature versions of themselves to become part of the display and also keep as a souvenir. They can also watch the model makers work, as the exhibit grows daily. —Margie Goldsmith



FOTOLIA

The National Immigration Law Center

“Give me your tired, your poor, your huddled masses yearning to breathe free. The wretched refuse of your teeming shore. Send these, the homeless, tempest-tost to me. I lift my lamp beside the golden door.”

—Emma Lazarus (inscription on Statue of Liberty)

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BJT readers—who represent one of the highest-net-worth magazine audiences anywhere—clearly have the means to contribute to a better world. To help you do that, we spotlight deserving organizations in every issue. All of them have received a four-star overall rating from Charity Navigator (charitynavigator.org), which evaluates philanthropic institutions based on their finances, accountability, and transparency.

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Talkin' about walkin'

Forget taxis, buses, and subways.

Our correspondent would much rather get around big cities on foot.

by Joe Sharkey

My love of long-distance city walking originated in the 1980s when I was an editor at the *Wall Street Journal*, which was then headquartered in the new World Financial Center by the Hudson River, just across from the World Trade Center.

Mornings and late afternoons at the newspaper were busy, but lunch-hour timing tended not to be rigorously enforced in that 24/7 pre-digital era. On nice days, I'd grab a falafel from a street cart and stroll around lower Manhattan, sometimes up through SoHo and into what was left of Little Italy and into Chinatown. Occasionally I'd walk across the Brooklyn Bridge and back. One of the great things about walking in New York: you never run out of city.

Some weekends, I'd persuade my kids to wander the city with me, though that became more of a challenge after they turned into busy

teenagers, when my daughter began referring to these excursions as Dad's Forced March, a term they still use, but now fondly.

I travel a lot to big cities, and taking a long walk in a city is always as crucial to me as fitting in a run is for others. Even with GPS, I often get into trouble when driving. (Not long ago, I spent literally three hours lost after trying to avoid traffic in Seattle while the lady on the GPS kept barking frantic orders at me to take this loop or that bypass.) This never happens when I walk, though of course my range is more limited then.

Not long ago, my wife and I stayed in a nice Airbnb apartment near Santa Maria Maggiore in Rome. One day I had a lunch appointment with my Italian publisher in Via delle Fornaci, which was about four miles away, on the other side of town. Worried that I chose

to walk in a city I hadn't visited since 1978, my wife spread out a subway map.

"Take the metro or you'll get lost," she insisted.

I demurred, "I love to walk in cities. I'm just a wanderer, a rambler, a flaneur, a boulevardier—"

"A drifter?" she put in. "Take the metro or a taxi."

But I walked and was at my publisher's office within about an hour. Getting there on foot was easy, as it always is in a city with big visual landmarks. From Santa Maria Maggiore, you skirt the Colosseum and the Forum, head over to the Plaza Venezia, which is readily identifiable by that enormous marble heap, the ugliest manmade structure on earth: the Vittorio Emanuel II monument. Turn right, pressing on with St. Peter's dome as a bearing. Cross the Tiber, dodge the armies of Chinese tourists taking selfies at Bernini's colonnade, hang a left



PHOTO: FOTOLIA

out the Vatican City wall and voilà (or however the Romans say that), you're at an outdoor café having lunch with your Italian publisher.

Landmark guidance is, obviously, most useful for walking in cities with familiar sights, including New York, Paris, and London—though walking in London can be more challenging than driving on the other side of the road, in that stepping off a curb requires resisting the nearly invincible instinct to first look to the left.

Apparently, more and more people are discovering the benefits of a city walk. Even Los Angeles, the quintessential city of the automobile, is becoming known for walking. I cite no less an authority than my one-time employer, the *Wall Street Journal*, which declared last spring: “Meet the hottest new amenity in Los Angeles luxury real estate: walkability.” The ability to walk to urban attractions, the *Journal* reported, is driving a new trend in Los Angeles-area real estate, from downtown to Beverly

Even Los Angeles, the quintessential city of the automobile, is becoming known for walking.

Hills. “There are days when I don’t touch the car,” one denizen said.

As such people are no doubt discovering, you see more on foot than you would in a car, bus, or subway. Plus, walking is excellent exercise and better for the environment. But the news isn’t all good: as more people walk, and as some drivers and pedestrians become increasingly engaged with their phones, pedestrian casualties are soaring. In 2016, there were nearly 6,000 pedestrian deaths

in the U.S., an increase of 46 percent since 2009, according to the Insurance Institute for Highway Safety.

Meanwhile, in some cities pedestrians face a new, if less-lethal, hazard: electric scooters whizzing around on sidewalks. The problem is said to be especially acute in San Francisco, where companies renting motorized scooters, well-funded as tech startups, are behind the proliferation. “Fury-inducing,” fumed the website Curbed San Francisco. “Cities need to develop a multimodal lane for more than just bikes.”

Well, that’s one idea. But to quote the late Gilda Radner as the persnickety Roseanne Roseannadanna on the old *Saturday Night Live*, “It just goes to show you, it’s always something — if it ain’t one thing, it’s another.” **BJT**

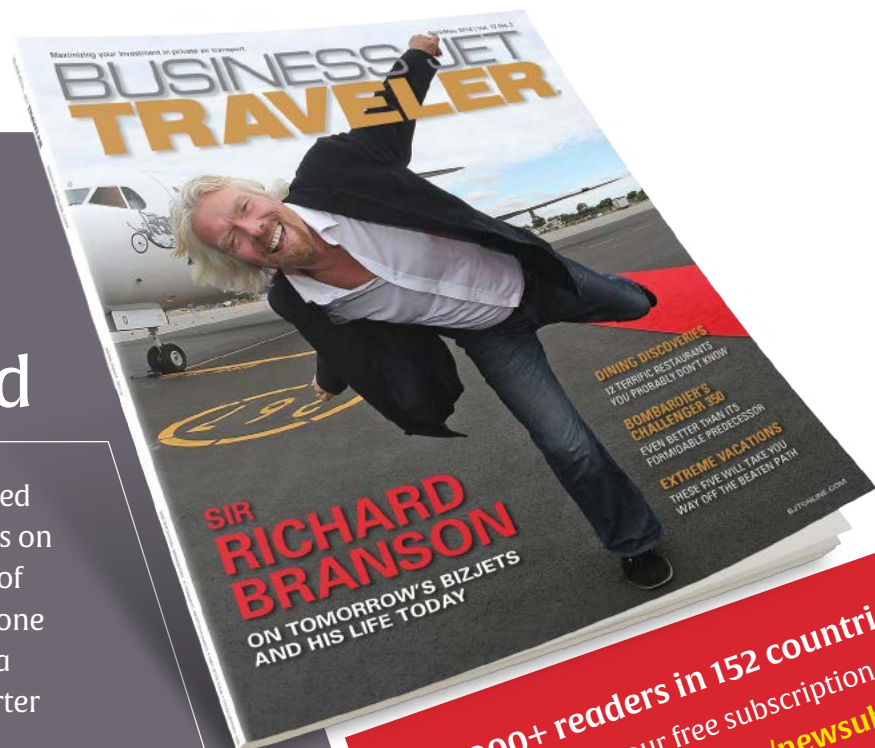
Joe Sharkey (jsharkey@bjtonline.com), the author of six books and a longtime **BJT** contributor, wrote a weekly business travel column for the *New York Times* for 16 years.

Well Traveled

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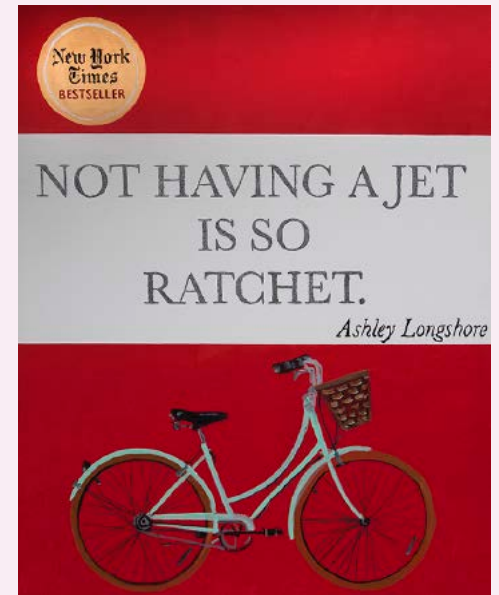
ASHLEY LONGSHORE

The artist, a huge fan of business jets, has achieved success with irreverent paintings and a personality to match.

by Margie Goldsmith



Longshore with members of her staff



Painting by Longshore

hand, had an independent streak and decided that she had an opportunity to live out her dreams. When she was 18, she took her father’s American Express card and bought a paint kit, which led to a decision to make art her career.

We visited Longshore’s New Orleans gallery, where she pointed out oversized gold-sequined armchairs, a decorated cardboard cake big enough for her to jump out of, and a display of glittery Judith Leiber-collaborated purses. Many of her paintings hung from the walls, including one the size of a garage door that read, “Little Miss Muffet Became Warren Buffett and Stacked Up Her Own Money, Honey.”

“If we sell that big one, we can get a P.J. to Carmel,” Longshore said, “And this one here is good for a flight to Jamaica.” She had also peppered her conversation with private jet references when we met her a few days earlier for our interview in New York, where the effervescent artist greeted us in her suite at the Plaza Hotel dressed in Brooks Brothers pajamas.

New Orleans-based artist Ashley Longshore has been compared to Andy Warhol because of her obsession with pop-culture figures and relationships with celebrities. Known for her paintings of icons ranging from Audrey Hepburn and Grace Kelly to Abraham Lincoln and Winston Churchill, she also fashions diamond rugs, jeweled butterflies, porcelain plates, blingy trays, sculptures, and bedazzled furniture. In January, Longshore became the first solo female artist to have her work featured in the Fifth Avenue windows and seventh floor of New York’s famous Bergdorf Goodman department store. Her collector clients include actresses Blake Lively, Salma Hayek, and Penelope Cruz, NFL quarterback Eli Manning, and Wall Street’s elite.

Longshore—who was included by *Forbes* on its 2014 list of the South’s leading female entrepreneurs—combines pop art with high fashion and has collaborated with such brands as Chloe, Anthropologie, and Judith Leiber. Her 2017 book, *You Don’t Look Fat, You Look Crazy: An Unapologetic Guide to Being Ambitious*, offers a window into her irreverent personality

and pop-art-filled life. The book—whose few printable chapter titles include “The Art of Self-Promotion” and “A Not-So-Desperate Housewife”—opens with an essay in which she proclaims that “I was born different. I was the weird kid who got picked on because I had a big voice and a loud personality, and I insisted on doing things my way.”

She still does, and her saucy style comes across loud and clear in her paintings: in one, Jesus holds a black AmEx card; in another, Wonder Woman dresses in Chanel. And then there are the paintings that broadcast her love of flying privately. The text on one proclaims, “I do not cook, I do not clean, I do not fly commercial.” Another announces, “Not having a jet is so ratchet.”

Brought up in Montgomery, Alabama, Longshore says her father was supportive but hoped she’d meet a really successful man. Her mother needed her husband’s permission to buy anything. Ashley, on the other



What initially attracted you to painting?

It was a place of escape from the outside world. At that time, there was all this press about Peter Max and Jeff Koons and I thought, “These artists are making \$50 million a year and they’re alive.” I’d always thought artists were famous when they were dead. I thought, “I’m going to be the woman artist.”

I wondered, “How can I build this thing and be the double-comma momma [millionaire] that I always wanted to be? How in the hell can I get on that jet?” And now I have huge chairs full of shredded money that say “double-comma momma.” And why not, damn it?

When you started, nobody would pay attention to you. Was it depressing?

F**k, no. What am I going to do? Sit on my sofa and cry—or wake up and make something? If I don’t make something, then I can’t sell something. If I don’t sell something, how the f**k am I going to get on a GIV?

“I am flying around in a fking Gulfstream and had my artwork in six windows on Fifth Avenue, and you know what’s funny? The f**king gallery said I wasn’t marketable.”**

Where do your ideas come from? Do they just pop into your head?

Yes. The other day, I had a conversation with a girl and this phrase came out: “It’s so vanilla missionary.” I love that s**t. I think it’s my job to say what’s going on in pop culture all around me.

You’ve been compared to Andy Warhol. Was he a big influence?

Warhol was painting objects that we could all relate to and I put a lot of that in my own art—Birkin bags, high-heeled shoes, black American Express cards, money, all these things that the media and the culture are telling me I need to make me somebody. I think that Warhol and I have that in common; but Andy was Andy and I am Ashley.

Were you influenced by Picasso?

I loved Picasso. The first one of his pieces I saw in person was *The Rape of the Sabine Women*. It moved me in a way that I’ve never been moved before. I wanted to paint like Picasso, so I taught

myself how to blend colors that way and then one day I just broke free and started painting what I wanted to paint. It’s an interesting step to go from seeing something in your mind to putting it on the canvas; it’s hard, like writing a book. You have to come up with your own method.

You’ve avoided the traditional gallery system.

I am not f**king giving up 50 percent [in fees to galleries]. I encourage artists to see themselves as entrepreneurs. You’re creating an item that people want, and you should be able to keep 100 percent of your profit. Fifty percent is way too much to give up and I think it completely f**ks up the value of the art market. If I go down to the Gagosian or Pace Gallery and spend \$3 million on a painting and the artist gets half of that, how much is that painting really worth? How can investing in a middleman make a painting actually worth \$3 million? I don’t understand the business model and I don’t tolerate it.

A lot of your art is about consumerism.

Are you embracing it or poking fun at it?

Both. Because it’s so silly but it’s also so fun. It’s a game—you know, get the Birkin, get the black AmEx, get the big house, get the Bentley, get the f**king GIV. What do you do when





Meeting Passenger Expectations for Inflight Connectivity



Rapid growth and development in the field of inflight connectivity solutions has allowed the much-touted “home/office in the sky” to become a reality.

As demand continues to intensify for inflight entertainment (IFE) and connectivity solutions on business aircraft, passenger expectations about those systems have risen. Today's private fliers anticipate seamless, secure connections, comparable to what they enjoy in their homes and offices.

“We're in the midst of a technological revolution in the cabin, which is catching up with the ground,” said Chris Moore, chief commercial officer at inflight connectivity provider SD. “Ours is a tech-based society, and people are accustomed to bringing their own device and content with them when traveling. That expectation doesn't change whether they're in a plane, train, or car.”

Fortunately, today's aircraft cabin connectivity systems are able to deliver on some of those expectations, whether for basic email and

SMS texting capabilities or teleconferencing and internet-based video entertainment. Systems employ a range of ground- and satellite-based data pipes, utilizing bandwidth on various communications frequencies.

The technology has reached the point where passengers expect connection speeds and reliability that compare to what ground-based systems provide. “That is now a reality, and for a broader range of aircraft,” noted Lupita Wilson, principal marketing manager for Rockwell Collins. “Ka-band services offer download speeds of 50 megabytes per second [Mbps], rivaling home internet, and fast enough to stream several movies.”

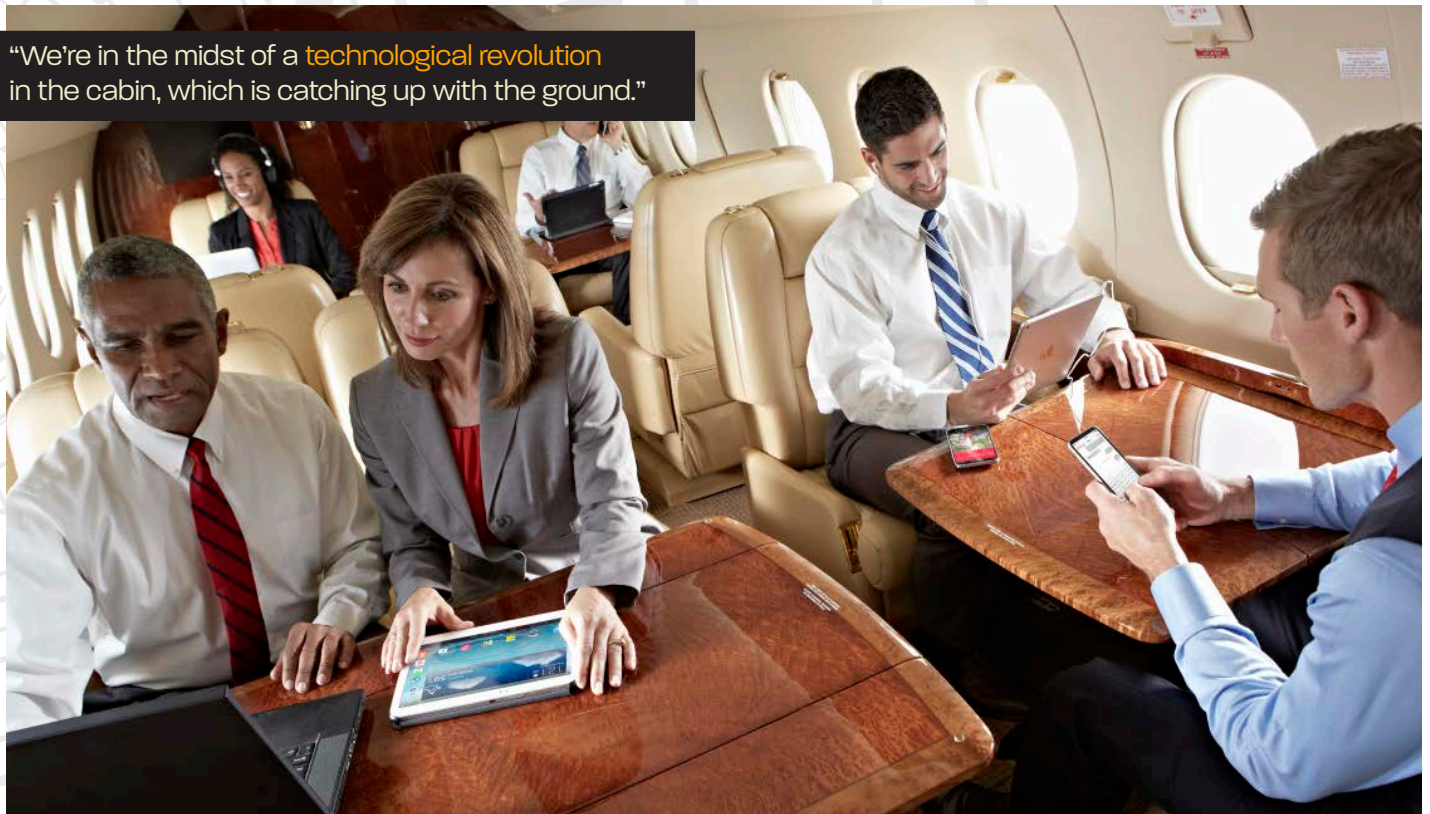
Just a few years ago, the best and fastest connectivity solutions were exclusively on high-end, large-cabin jets, but today it's not

uncommon to see smaller aircraft with fast and reliable internet streaming services. “We're seeing a merger between mission and capability in both smaller and larger aircraft as connectivity services become more widely available for rotary through to airliner-size business aircraft,” Moore noted.

One of the earliest entrants in the onboard-connectivity market was Aircell, which has since been rebranded as Gogo Business Aviation. The company's AVANCE L3 and L5 platforms offer connectivity through the ground-based Gogo Biz network at 3G and 4G speeds, respectively, and near-global inflight voice and data connectivity through Inmarsat's SwiftBroadband service, and Iridium Certus on the horizon.

Gogo Business Aviation president Sergio Aguirre noted that this coverage allows providers

“We're in the midst of a **technological revolution** in the cabin, which is catching up with the ground.”



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to tailor offerings to the demands and budgets of individual customers. "The size of the aircraft is less important to the level of connectivity than the purpose of the flight," he said. "What CEOs need to run their business and maintain their life is fairly consistent, regardless of where they're traveling."

Earlier this year, Gogo Business Aviation announced its 200th airborne L5 platform, and the company has a backlog of several hundred additional systems. "There is a tremendous need and desire for connectivity, and that is only going to increase," Aguirre noted. "We're thrilled with the feedback we've been receiving from the customers who are flying with AVANCE L5, and we continue to ramp up production to meet market demand."

Avionics manufacturer Rockwell Collins offers a wide range of satellite-based connectivity solutions through its ARINC Direct service, including the Inmarsat Jet ConneX Ka-band global connectivity system as well as Inmarsat

SwiftBroadband L-band service, and Ku-band Iridium and Viasat broadband services.

"Inflight connectivity without compromise is now a reality," Wilson noted. "The only limitation is size of the tail to fit the antenna, but technology changes are driving down the size of those antennas, and that will enable smaller aircraft to use antennas to support higher-speed satellite streaming."

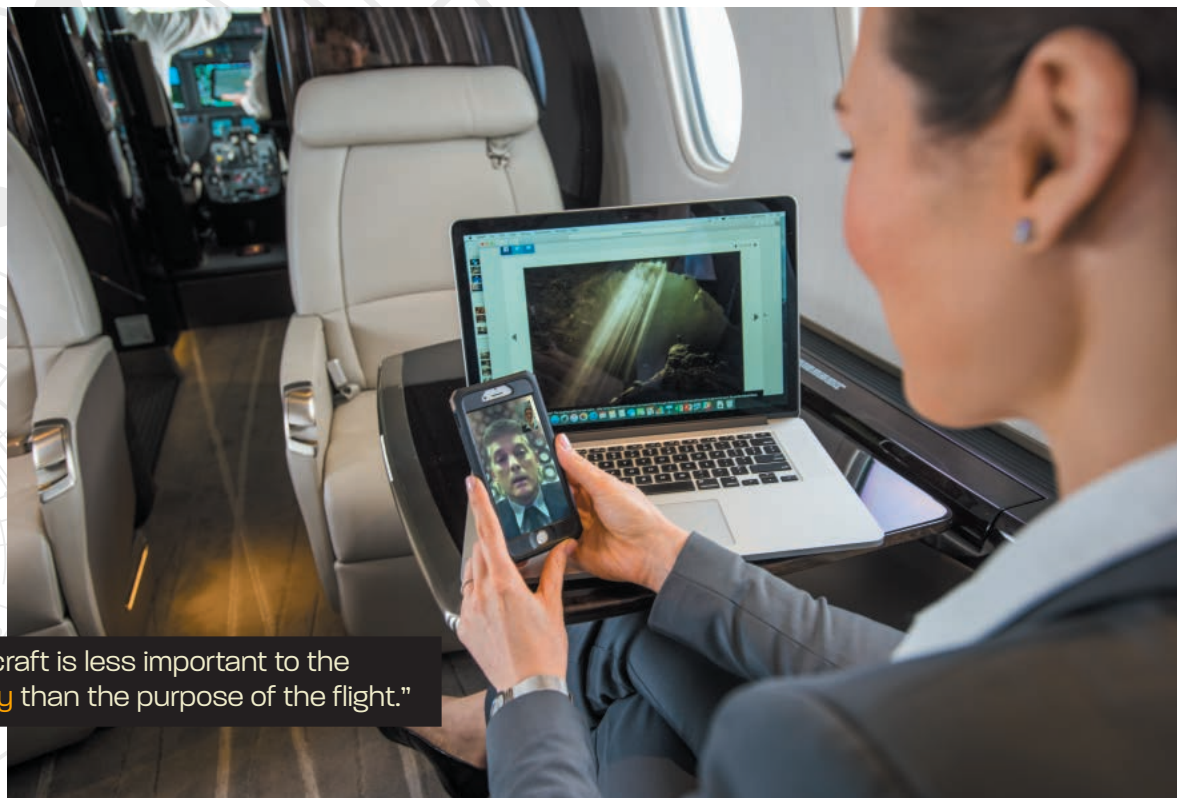
New providers are also finding new areas to develop within these established paths for ground- and satellite-based connectivity. SmartSky Networks recently introduced its proprietary ground-based beamforming technology, which focuses a 4G LTE connectivity beam to individual aircraft, offering what the company states is a stronger two-way connectivity solution.

"Our system moves data to and off the aircraft very quickly," explained Alan Goodnight, SmartSky's vice president for business aviation. "Satellite beams from space scatter and cover a huge area, and every aircraft within that beam

must share the bandwidth delivered. Our network gives every aircraft its own dedicated beam."

The broad range of available solutions also means installers are seeing more aircraft than ever come in for equipage with onboard connectivity systems. "Our customers want internet capabilities," said Justin Vena, senior installations sales representative for Duncan Aviation. "Everyone is busy with internet installations now; you can't pick up the phone and expect to get your aircraft right in."

Duncan Aviation performs installations of Cobham, Honeywell, Rockwell Collins, Gogo, and SmartSky equipment, covering a variety of ground- and satellite-based connectivity options and allowing customers to choose from multiple options to find the best solution for their mission. "The internet is the great equalizer," Vena continued. "Whether they're flying to Boise or London, for business or on vacation, passengers are checking social media, watching movies, and preparing presentations."



"The size of the aircraft is less important to the level of **connectivity** than the purpose of the flight."



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Offering More Options

Of course, operators also want the highest degree of capability and usability for the lowest price available. While connectivity costs have remained largely stable over the years, what's changed is how equipment and data plans may be tailored to suit a company or individual's mission requirements.

"The value proposition has gotten significantly better, and the ability to address specific needs has also gotten better," Aguirre stated. "It used to be one box, one price, one subscription. That made it impossible to address the entire breath of the market. Compare that with today—our AVANCE L3 is a smaller box than an ATG5000 and router, with functions that used to be available only as standalone options. With L3, those functions are delivered as a complete solution in a package that is smaller and less expensive than previous systems. The same is true with rates and services; we start with an hourly plan for email or texting and go all the way to a pro

plan with unlimited data. That allows the customer to pick a profile based on their needs."

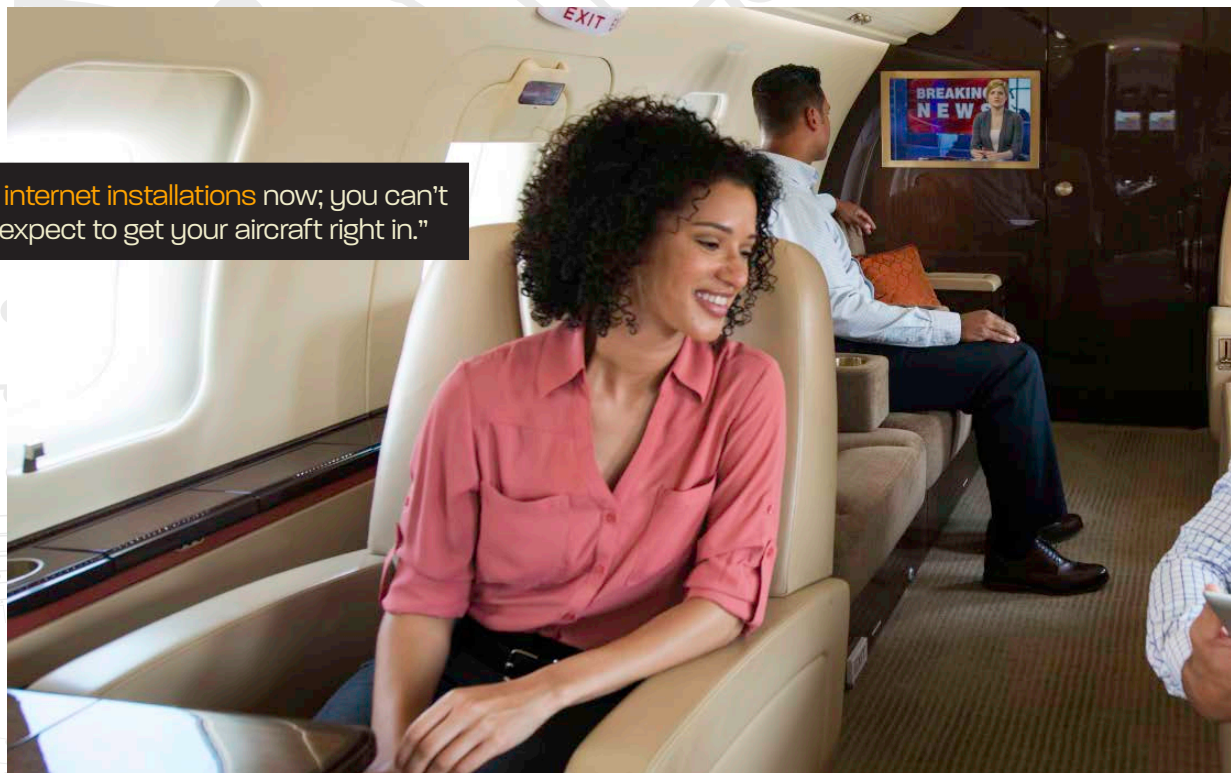
"We're not seeing downward pressure on costs, because equipment costs haven't changed all that much," added Vena. "That said, at one point Ku-Band was the top dog on the heap with a price point significantly above that of SwiftBroadband, and now that's leveling off with the introduction of Ka-Band systems at a similar—though not equal—price point. That's forcing upgrades and pricing to remain competitive, even with Ka the most 'spendy' of the lot."

"There will always be a price gap between the costs for land-based terrestrial communications versus high-throughput capability through a satellite to an aircraft moving at .80 Mach," Moore said. "The value is increasing with more market entrants in this space, but I don't think it's a commoditized service like other forms of telecommunications. It's about providing a value-based service on a moving target, and the value proposition back to the client."

"We've definitely seen the market change over the past few years," agreed Wilson of Rockwell Collins. "Pricing will continue to change as new technologies are introduced, and customers invest in them. Older connectivity solutions have come down in price with the introduction of Ka-band, and it will be interesting to watch what happens. What's also different today is the availability of packages with more flexible pricing."

SmartSky's Goodnight noted that the relatively high cost for inflight connectivity is tied to the specific needs of the business aviation market, as well as its inherent limitations. "The demand for data has greatly increased; it is now an expectation, even a go/no-go decision," he explained. "However, in business aviation we have a flat or perhaps declining market size.

"It's unlikely we'll see significantly more customers to sell to within three to five years, although the costs to deliver data have increased," he continued. "Terrestrially, cellular prices are coming down because more customers are signing up. It



"Everyone is busy with internet installations now; you can't pick up the phone and expect to get your aircraft right in."

Cybersecurity Is a Joint Responsibility

The proliferation of aircraft connectivity solutions has brought with it new concerns about the security of the connected cabin. How worried should passengers be about a criminal entity hacking into an aircraft, and to what degree are operators and passengers responsible for maintaining a safe and secure environment? We asked these experts for their thoughts:

Alan Goodnight, vice president for business aviation, SmartSky Networks: Most operators are not security experts, but they are responsible for adopting technology and processes that provide the expertise and security needed to match their requirements. In concert, the system provider should take steps to advise the operator on the best approach and offer services that comprehensively address security challenges or regulations.

That said, we feel it is a shared responsibility between the system providers and the operator. While SmartSky provides optimal levels of secure connections between the aircraft and our ground network with our proprietary beamforming to make interception on this link nearly impossible, neither the system provider nor operator can solve the cybersecurity challenge by themselves, and no one size fits all. This requires a consultative approach and should be revisited on a continual basis. It's not a simple set-it-and-forget-it situation.

Chris Moore, chief commercial officer, SD: Onboard security largely comes down to the human factor. Our obligation is to provide those on the aircraft with the most secure boardroom imaginable, but people remain susceptible to phishing emails, and may even fall for requests for their passwords. Is your password still your date of birth? And, it should go without saying that the password for your aircraft's network should never be your tail number!

Last month, a customer flying over Asia encountered malware on a laptop belonging to one of the guests onboard. We were able to notify the aircraft in flight and deny service to that laptop. Lots of companies with cybersecurity can tell you when you've been breached; we want to be in front of the aircraft and tell you how we've solved the problem.

Mike Syverson, senior vice president for technology & programs, Gogo Business Aviation: As companies become more sophisticated about security, flight departments fall under those auspices, and we've become more active in working with those departments to help them protect their information.

Basically, you want to create a level of network security that is at least the equivalent of, or better than the level of security passengers would enjoy if they were working in their office or home. We like to call it "sensibly safe," which is something that people should expect when they are in a business jet that provides high-speed connectivity, and Gogo's network provides it.

We are very aware of the ever-pressing need to be vigilant in staying ahead of potential threats to the security of airborne cabin systems. As a result, from the outset we were highly proactive in designing and building security directly into our products, networks, and services. In other words, security wasn't something we added after the fact—it's been fully integrated in our network and systems from the beginning and remains an integral part of our service offering. And, finally, companies often prefer to use their own VPN, which we highly encourage and support to make the connection as secure and effective as possible.

Justin Vena, senior installation sales representative, Duncan Aviation: Every so often, we'll hear of someone supposedly hacking through the aircraft router to affect the engine and FMS. Now, is it possible that someone who wants to do wrong could do that? I suppose if someone is dedicated enough, but anyone attempting to send a message to the airplane needs specific equipment, knowledge, and coding.

While it's true the cabin router can be connected to the FMS, the FMS is a "speak-only" system (when it comes to the cabin router) that doesn't "hear" anything from the outside. There are also systems that are directly connected to the FMS for wireless database loading, but they are only operational with weight on the wheels, and the cabin door open—you can't hack into it in the air, and the equipment expects specific programs to send it information. The likelihood of everything lining up just to grant unauthorized access to an aircraft system is pretty low.

Lupita Wilson, principal marketing manager, Rockwell Collins: Our industry is a bit paranoid about security, and that's not a bad thing because it keeps us thinking about it. Regarding security of systems installed on the aircraft, we test continuously to identify threats such as hackers and ensure the IP is secure. We are also available to help support proprietary tests conducted by aircraft OEMs and operators to verify the stability and security of their solutions utilizing Rockwell Collins equipment.

Of course, one of the most critical components of security are the passengers, and they should be thinking about how to minimize their risk and be aware of what they're putting on the aircraft. It's mostly common sense: never open an email that looks suspicious, make sure your PC has a reliable antivirus solution installed...and never give out your password!



doesn't cost less for those networks and providers to run their businesses, but they can amortize their costs over a greater number of customers."

Managing Passenger Expectations

Today's systems offer greater capabilities than their predecessors, but the complexities involved in moving data to and from a high-speed jet traveling at FL410 pose challenges. The good news is that geographic constraints are easing, and both ground- and satellite-based systems can provide reliable coverage.

"The existing limitations to both ground-based and satellite-based capabilities are decreasing with more high-throughput satellites being launched, enabling us to serve the customer over land or sea," said SD's Moore. "Speeds are increasing and, thanks to the global reach of Ku and Ka satellites, the poles are really the only areas where you may not find a consistent footprint.

"It's the nature of business aviation to have high expectations," he continued. "Corporate

passengers value high-resolution screens with 4K capabilities and the ability to throw content from their device onto the screen. Those things are possible."

Goodnight noted that high customer expectations are the reason SmartSky opted to launch with its flagship product tailored for mid- and large-cabin jets, including Challengers, Falcons, and Gulfstreams. "This segment has unique buying behavior and approaches pricing differently than those operating smaller aircraft," he explained. "They expect to be able to use the internet as they use it on the ground, and truly have an office in the sky."

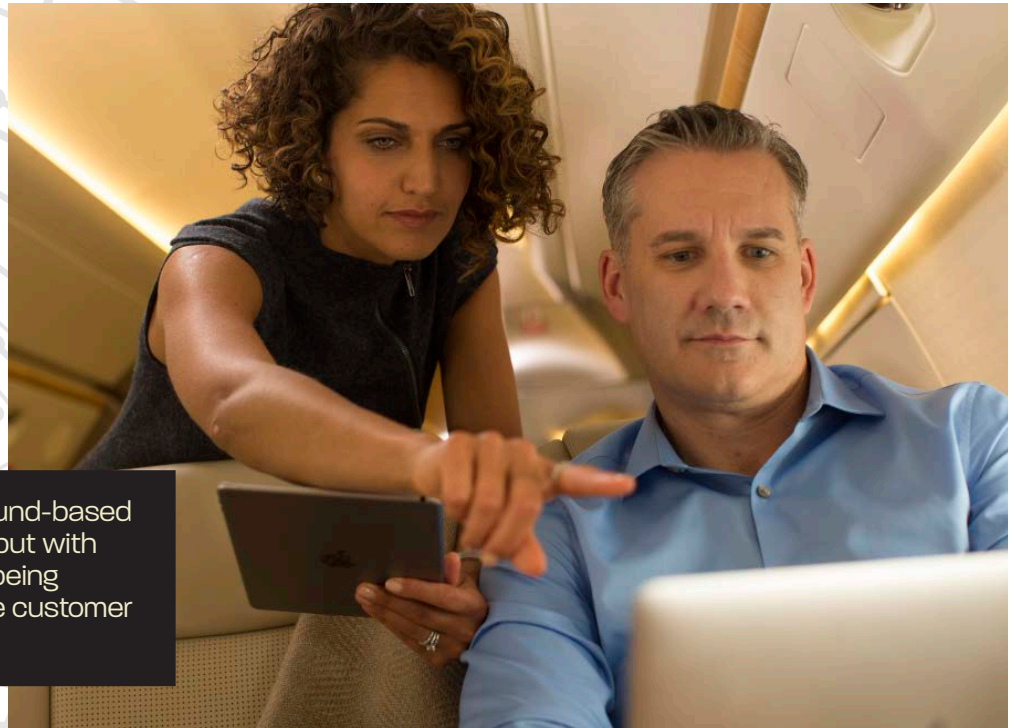
Vena agreed that that's possible, depending on what you have installed. "If you're working with 25 MB, that's enough to do one thing at a time very well—watch a movie or stream internet video. Higher speeds bring greater capabilities, to where you can have a couple of FaceTime conversations while also streaming Netflix. The solutions out there now allow for greater usability than we've ever seen going into airplanes before."

Aguirre noted, however, that inflight connectivity isn't quite on par with what's available on the ground—at least so far. "I do believe that gap will close," he said. "There will be a point when we'll be able to do anything in the air that we can do on the ground, as we deploy faster, more effective technology solutions, but for the foreseeable future there will be a gap because cost to deploy faster networks on the ground will always be less."

Connecting Beyond the Cabin

Passengers aren't the only ones to benefit from advances with inflight connectivity. Operators are increasingly discovering that the benefits of a connected aircraft extend beyond the cabin and into the flight deck and even to maintenance support.

SD utilizes its network to support dispatch, flight tracking, maintenance, and security applications. "For schedulers, our entire mission is to synchronize the aircraft flight with the company's operations staff to provide consistent



"There are limitations to both ground-based and satellite-based capabilities, but with more high-throughput satellites being launched, we're able to serve the customer over land or sea."



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service and ensure passenger and crew expectations are met," Moore continued. "That includes constant review of the flight plan for potential deviations—not only for weather conditions, but for safety, data-security issues, and outages in internet coverage."

Wilson noted that Rockwell Collins also offers a variety of support services for both domestic and intercontinental flights. "For example, we supported several flights traveling to World Cup competitions, and we constantly adjusted flight plans based on who was playing," she added. "We're looking into a road map for enabling hardware to interact and provide information for maintenance data and tracking, and to

have that aircraft fully connected not just for passengers but also in the interest of maintenance and reliability."

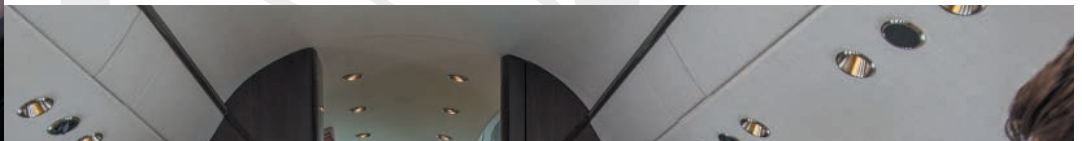
Aguirre noted that Gogo Business Aviation is used for a variety of flight-support applications—such as ForeFlight Mobile, FlightAware Flight Tracker, Garmin Pilot, and many more—that interface through the company's platform to provide location awareness, updated FBO and fuel-price information, and other relevant flight data through an iPad, which ground crew and dispatchers may also access.

"We also work with the Weather Company to gather information from the aircraft that is used to predict turbulence in real time through the WSI Total Turbulence solution," he continued. "Their algorithm sends a turbulence notice along that particular route. Where flight crews once

had to rely on PIREPs, with our system onboard it's now fully automated."

SmartSky has developed a technology framework (Skytelligence) empowering development of apps and services to bridge the gap between cabin and flight-deck connectivity. "As an example of what the framework provides the market, patented 5D flight-path management algorithms can be accessed via Skytelligence to bring greater efficiency into flight planning, allowing a pilot to determine the best route based on time considerations or money," Goodnight said. "How do I get to my destination the fastest, or the most efficiently?"

"We also envision engine manufacturers to begin telling us they want real-time performance data to help them predict maintenance or repair events," he concluded. "An amazing amount of data can be selected." ■



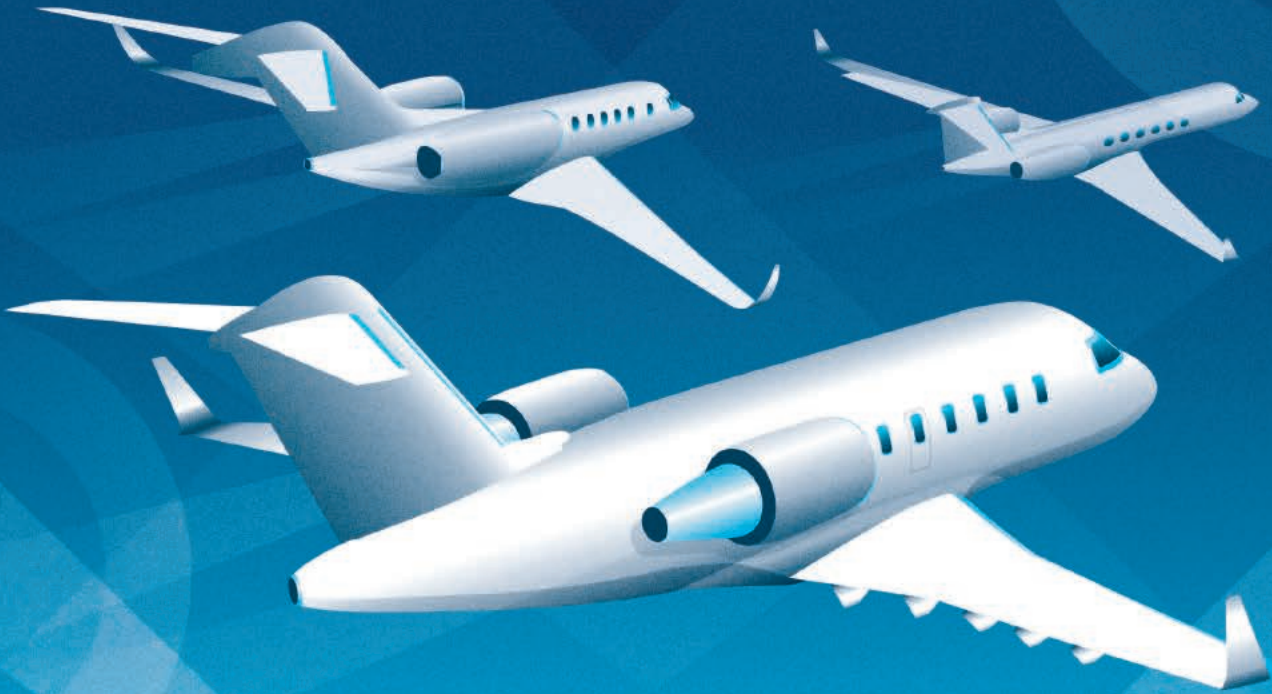
"For schedulers, our entire mission is to synchronize the aircraft flight with the company's operations staff to provide consistent service and ensure passenger and crew expectations are met."



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MARGIE GOLDSMITH

you master that level? You go on to the next. Or you realize that the greatest thing in life is having a picnic in a field with your friends and laughing like crazy. It's fun to have stuff, but it isn't necessarily what defines you.

How do you work with social media?

Being able to have this instant gratification and connectivity to the entire world is intoxicating and beautiful, and we're just in the beginning of what all of this technology is going to be. Five years from now, we could be doing a hologram interview.

Artists come to me and say, "How do I get more traction on my social media?" It's not this magic equation. If I have a show and get people to follow me on Instagram, I'm getting people's email addresses. I'm using this as a tool. And it's free. When I started, I didn't have money, so I was going to use anything that's free to connect to people who might be buying my product.

How do you choose your people subjects?

Sometimes it just pops into my head or I see something. I saw a black-and-white photograph of Teddy Roosevelt and got so tickled at the idea of making his mustache glitter. And then I thought, "You know, Teddy would look really good in a Gucci jacket."

Your work seems to be largely about our culture's materialism and people who relate wealth to happiness and power. How do you feel about ostentatious wealth?

I don't like pretentiousness. My mother's the most pretentious human on the planet,

and that pretentiousness makes me uncomfortable. I am posting images of me in front of the GIV on my social media, and the idea is not to be ostentatious. The idea is to go, "Hey, I am a self-taught artist from Montgomery, Alabama. There are no f**king excuses. You can do this."

What do you think about income inequality in the U.S.?

F**k that s**t. Start your own business. Make your own money. I live in a country where as a woman I can be an entrepreneur. I can have 20 people on my team and make sure they have health insurance, make sure everybody's comfortable, making money, and that they have days to spend with their family.

What did the show at Bergdorf mean for you?

How many people hope to be the first female artist with a solo exhibition at the pinnacle of luxury shopping, Bergdorf Goodman? How many artists get six windows on Fifth Avenue and then get asked to redesign the restaurant on the second floor? It's a huge endorsement. But, my God, it's America, and anything can happen. I am flying around in a f**king Gulfstream and had my artwork in six windows on Fifth Avenue, and you know what's funny? The f**king gallery said I wasn't marketable.

There are many private jet references in your art. Do you own a jet?

Would I want the overhead? Why would I buy it when I could just lease it? That's a lot of cheese. I love the idea of renting them.

Do you charter or have a jet card?

I charter from different companies. A company just contacted me and said, "Please let us give you quotes." I think it's fun to see the different pricing these companies come up with.

How much do you fly privately?

Probably one or two times a month.

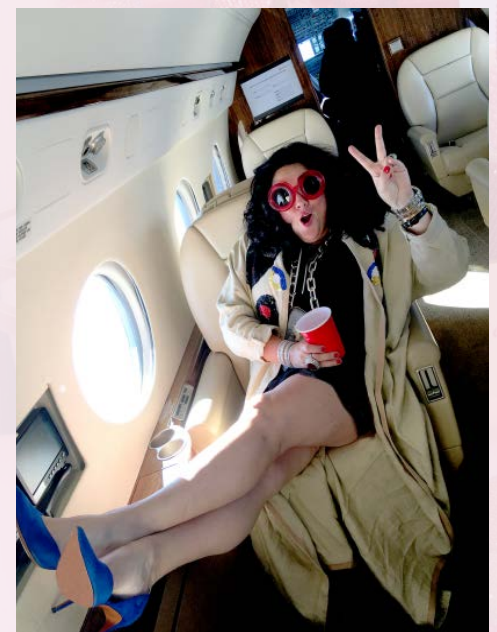
And what does flying privately mean to you?

When you are at 43,000 feet and you are 9,000 feet above those commercial flights and you are with these people that you love and you're popping champagne and you've got the new Drake [album] blasting, it's a high. Being able to fly private is the best drug I've ever felt in my whole life, all the way from smelling the gas on the tarmac to walking up those steps or loading up my hound dogs and taking pictures of their little faces peeking out.

It's so comfortable. I think it's so tacky to have to go through security and have to take off my pearls and my Gucci shoes. Flying on a private jet is glamorous. It's fun and not only that, time is my most precious commodity. I am dying to get on a f**king P.J. and get my ass back to New Orleans and not on a f**king Delta flight. It's just such a treat.

What kind of airplanes do you like?

Heavyweight jets. I love the Citation X, but baby, get me on that G[ulfstream]. I was on a flight to California not long ago and there was a flight attendant who had set up a buffet, and I am like, "We are on a P.J. and there's a f**king





ALEXANDRA ARNOLD

FASTFACTS

- ▶ **NAME:** Sarah Ashley Longshore (known as Ashley Longshore)
- ▶ **BORN:** Aug. 19, 1975 in Montgomery, Alabama
- ▶ **EDUCATION:** B.A., English literature, University of Montana
- ▶ **OCCUPATION:** Artist and owner of New Orleans' Longshore Studio Gallery
- ▶ **TRANSPORTATION:** Private jet charters
- ▶ **PERSONAL:** Lives in New Orleans with husband Michael Smith and two basset hounds, Honey Bee and Buttercup. Plays guitar, yodels, churns butter, collects hawk feathers, and raises chickens.

buffet over there.” I’m just grateful. It’s awesome to be in a position to be able to do that and to share it with my team and my family.

Who have you flown with?

I have some very wealthy oil-money clients, also some East Coast hedge-fund-money people. A client of mine sold his business for \$968 million. We were in Dallas and he’s like, “When are you all flying back?” And I go, “Oh, we’ve got to fly back tomorrow at 1.30 p.m.,” and he goes, “F**k that, we are gonna party, my jet will fly you back.” So, I mean, why the f**k would I buy a jet?

What’s left for you to do?

Tons of stuff. As an artist, I have an endless amount of ideas for things I want to create, but I also want to help other artists realize how to be entrepreneurs, how to keep 100 percent of their money. And there are some organizations that I want to help. A political figure just bought some artwork of mine. I don’t necessarily share the same political values, so I took the money and wrote a check to a charity in New Orleans, and that felt really good. When you work hard and are grateful and you start to have everything you’ve ever imagined, then you help people. **EJTB**

Longtime contributor **Margie Goldsmith** (mgoldsmith@bjtonline.com) interviewed Kiss lead singer Paul Stanley for our April/May issue. This conversation has been edited and condensed.

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Air-traffic-control turbulence

Does privatizing America's ATC system make sense? Probably not, but proposals to do so keep coming.

by Jeff Wicand

Efforts to privatize the U.S. air-traffic-control system and to change how it's funded have been dragging on for years. These efforts gained more traction in 2017, however, as ATC privatization was proposed by President Trump's 2017 budget and the House Transportation and Infrastructure Committee approved (by a 32-to-25 vote) a bill sponsored by Bill Shuster (R-Pennsylvania). Both proposals would turn over the ATC system to a private, nonprofit corporation (called, in Shuster's version, the American Air Navigation Services Corporation, or AANS).

At first blush, this seems like a crazy idea, but Canada and the United Kingdom, two countries not known for insane behavior, have privatized air-traffic-control systems. To paraphrase Henry David Thoreau, less government is better, so we're better off (the thinking goes) if we hand over our air-traffic-control system to a private enterprise, even if it's not driven by a profit motive. The new-and-improved ATC would be, at least in Shuster's version, run by a 13-member board of directors drawn from various aviation sectors. The folks in the tower would become employees of AANS instead of the Federal Aviation Administration.

As currently run by the FAA, America's ATC system is funded by



excise taxes on transportation and fuel that are little known to the public. It's a mystery why more travelers aren't aware of the transportation tax, which is often called the "ticket tax" because it adds 7.5 percent to the cost of airline tickets and charter flights. The fuel tax is below the public radar, however, because it's paid at the gas pump. (For jet fuel, the current rate is 21.9 cents per gallon; for avgas, it's 19.4 cents.) Various wrinkles and exemptions apply. A higher rate is charged, for example, if a truck delivers the fuel to the airport; there's also a surcharge for gas used in a fractional-ownership program.

The ticket and fuel taxes are in large part mutually exclusive. After collecting the ticket tax, airlines and charter operators are eligible for a refund of most of the tax paid when fueling their jets. Non-commercial, private aviation simply pays the fuel tax. Receipts from both taxes are funneled into the Airport and Airway Trust Fund that Congress established in 1970 to provide a dedicated source of funding to keep our aviation system running. The costs of the ATC system, airport improvements, and FAA operations are supposed to be paid from this fund.

It isn't clear what's wrong with this arrangement. The airlines, however, would prefer that AANS, not Congress, control their financial contribution to the ATC through a new tax—not to be called a tax, of course, but rather a "user fee," a charge for the use of FAA navigational services that, in Shuster's bill, would replace the ticket tax.

User fees are not a new concept; they've been bandied about for years, and both the George W. Bush and Obama administrations proposed them, without success. The fees would give airlines greater flexibility in paying their

share of ATC expenses than the present system. But does privatizing ATC and paying for it with user fees make sense? Not really. Why would we essentially give away our ATC assets to a private company like AANS with no provision to get them back, if necessary? And what do we privatize next—the Air Force? The FBI?

Still, some policy wonks derive philosophical satisfaction from shrinking our federal government, and fans of privatization argue that the industry would run the ATC system more efficiently, with the cost of operations allocated more fairly through user fees than it is with the ticket tax. Proponents don't seem concerned about the enormous expense likely required to completely retool how the ATC runs and is paid for, and not much is known about how the retooling would work. Wouldn't it be better to spend the money on continuing to modernize the ATC system?

Though Shuster's bill only replaces the ticket tax with user fees and preserves the fuel tax for non-commercial aviation, there's no guarantee that, once user fees are established, they wouldn't eventually replace the fuel tax as well. Currently, as noted earlier, private aviators support the ATC system and the FAA by paying fuel taxes every time they buy gas. Fuel taxes are thus collected *before* the aircraft fly anywhere and are easily funneled to the Trust Fund coffers. User fees, however, are based on use, so they must be determined and paid *after* they are incurred. Hence the need for more federal government tax collection bureaucracy.

Even if user fees replace only the ticket tax, there's also no guarantee that the new setup wouldn't require Congressional bailouts from general taxes or that those user fees wouldn't rise through the

roof. The experiences in Canada and the United Kingdom are not encouraging in that regard.

The biggest losers with ATC privatization are likely to be business and general aviation. Superficially, a board of directors with a variety of aviation "stakeholders" would run Shuster's AANS, but critics say that, given where the members are drawn from, the board would end up controlled by airline-related interests. They worry that the focus would accordingly be on the major airline corridors, with rural airports and users becoming second-class (or maybe third- or fourth-class) citizens. When the Trust Fund no longer receives the proceeds of the ticket tax, where will the money come from to pay for airport

Why would we essentially give away our ATC assets to a private company? And what do we privatize next—the Air Force? The FBI?

improvements? Additional funding for rural airport upgrades is supposedly on the table, but there's nothing definite in terms of sources and amounts. If the airlines control the AANS, will improvements at the airport in, say, Muscle Shoals, Alabama, ever take priority over upgrades at Chicago's O'Hare?

No wonder the National Business Aviation Association, Aircraft Owners and Pilots Association, General Aviation Manufacturers Association, and other industry groups lined up in opposition to privatization. A joint release from these organizations advocates reform rather than revolution: "We believe efforts should focus

on developing a long-term FAA Reauthorization that creates the stability and funding necessary and that can reach the President's desk for signature."

For the third year in a row, privatization efforts in the House have stalled, but there's no guarantee they won't be back in 2019.

The FAA isn't perfect and—though it's the best operation of its kind in the world—neither is our air-traffic-control system. But there's a good argument that it's easier and safer to try to improve the existing system rather than opening a can of worms by consigning air traffic control to the private sector. **BJT**



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FACTORY-NEW
AIRCRAFT



The Daher TBM 930 (foreground) and 910 on the static display in Geneva at EBACE 2018

DAVID McINTOSH

Daher TBM 910/930

Thanks to ongoing improvements, the TBM series turboprop remains popular three decades after its introduction. The latest versions are close to perfect.

by Mark Huber

Keeping a 30-year-old airframe design relevant is no small task, yet Daher has managed to do it with the single-engine turboprop TBM year in and year out, tweaking performance while adding features, functionality, and convenience typically found only in larger aircraft. As a result, the TBM continues to be a solid seller. The company sold 880 of them through 2017, and it plans to build 53 this year.

The numbers are all the more remarkable when you consider that, aside from Piper's "M" Class, the TBM has the most cramped six-seat turbine cabin in the sky. Its cross-section is just under four feet wide. This is an airplane that was originally built for speed, not necessarily for comfort.

That is no surprise when you consider that what became the TBM started in 1973 after Mooney Aircraft Co.—a Texas manufacturer of single-engine piston airplanes notorious for skinny cabins and swift speeds—began working on another speed-demon model, the 301. But before that airplane could make it to market, a consortium of investors from France purchased Mooney, dropped the project, and formed a joint venture with Socata, a subsidiary of Tarbes, France-based Aerospatiale. Together they developed a 300-knot single-engine turboprop that used some of the 301's design data.

The TBM 700 first flew in 1988 and was certified in 1990, when Mooney withdrew from the

joint venture. The end product was a six-seat, 292-knot, pressurized aircraft that was mostly metal, but used some composites on the control surfaces. Mooney lives on in the model as the "M" in TBM (the "TB" stands for Tarbes).

Over the years, Socata modestly improved the design, with better environmental controls; vapor-cycle air conditioning; avionics upgrades; a small beverage cabinet; a wider main cabin entry door well-suited for loading outsized cargo; and an optional separate forward pilot's door. Passengers sit in facing club-four seats and there is room for two pilots (although the airplane is certified for single-pilot use and



The TBM 930 flight deck



most operators fly it that way). The passenger seat bottoms are 18 inches wide and have 22-inch-high backs. That leaves a really narrow 11-inch-wide aisle. A single club table deploys from the righthand sidewall and there are power outlets for laptops.

The cabin is quiet for a turboprop, but still noisier than a jet. The aft-located main door measures 3.5 feet high and 3.9 feet wide and swings up and out of the way on a pair of gas-charged springs. An electric motor drives it back down. Most baggage is stored behind a cargo net in back of the rear-most row of seats. A small baggage compartment with an external door in the rear fuselage will hold 77 pounds and is big enough for a pilot's overnight bag or a tool kit. An even smaller forward storage compartment, also with an external door, typically holds the tow bar and the engine inlet and exhaust stack covers.

In 2006 the TBM 850 made its premiere with a more powerful and thirstier engine that boosted maximum cruise speed to 320 knots; however, because it cruises and climbs quicker, the 850 actually has slightly longer legs than the older 700.

French aerostructures company Daher purchased Socata from parent company EADS in 2008 and continued the campaign of TBM product improvement that led to the launch of the 900 model in 2014.

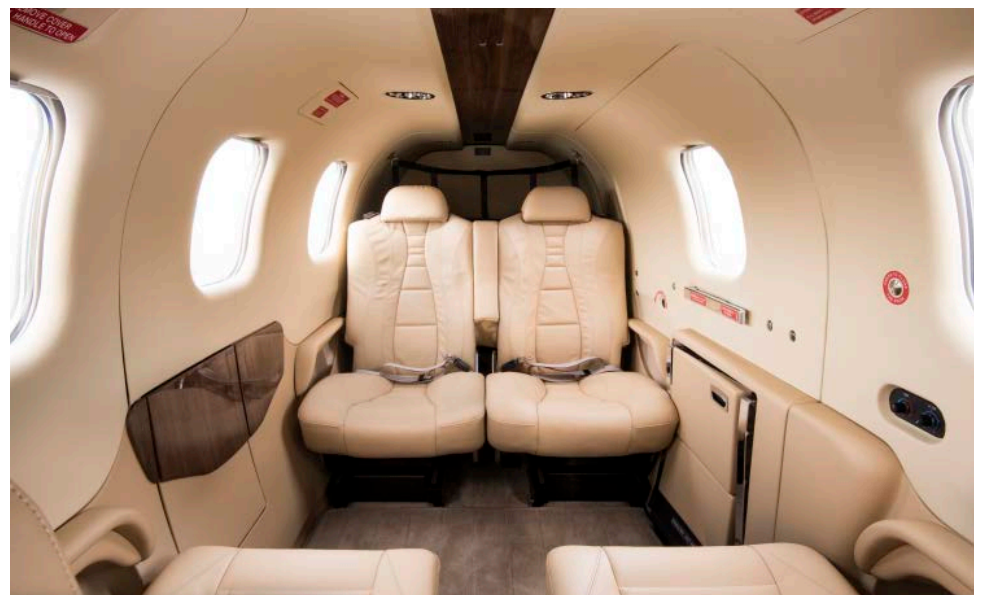
The 900 features a host of aerodynamic improvements, including a quieter five-blade propeller, sexy curved winglets, and a redesigned engine cowl and inlet crafted of carbon fiber that reduces drag and boosts cooling. The previously optional pilot exterior door became standard and its construction was much improved. In total, the conglomeration adds 10

knots to cruise speed (330 knots at 28,000 feet) and improves runway and climb performance: the 900 rotates off the runway and clears a 50-foot obstacle in less than 2,400 feet fully loaded—20 percent less distance than the 850 would require—climbs at 2,000 feet per minute, and can reach its 31,000-foot maximum cruising altitude in just 18 minutes, 10 percent faster than the 850. Range increases more than 9 percent to 1,730 nautical miles. The 850 could run close to some light jets; the 900 can definitely run with them. The cockpit was cleaned up and simplified as well, and the redesigned engine power lever is as close to idiot-proof as they come.

Indeed, the 900 was almost as optimized as Daher could make it. I say “almost” because beginning in 2016 the company started offering customers the aircraft with the Garmin G3000 touchscreen avionics system on a higher-priced



Elite Privacy Compartment



FACTORY-NEW AIRCRAFT

variant labeled the TBM 930. The G3000 is the next-generation backbone for the avionics on some larger, faster jet aircraft such as the HondaJet and the Cessna Citation M2. The G3000 offers pilots reduced workload and new frontiers of situational awareness. In an aircraft like the TBM 930, which is routinely flown single pilot and can snap off the runway in a brisk nine seconds, easier avionics are a very good thing.

This is not an airplane that suffers fools gladly. Pilots may not need a type rating, like they do in a jet, to fly a TBM, but if they don't bring jet discipline to the cockpit they are asking for the fates of physics to rise up and smite them. That said, a competent pilot can fly the TBM just fine with the standard Garmin G1000 glass-panel avionics, and opting for the latest version of that system shaves about \$200,000 off the 930's \$4.2 million (nicely equipped) list price. New TBMs with the G1000 system are now badged TBM 910s. You can get all the same options, save the avionics, on the 910 that you can get on the 930. Daher says its customers are split about 50-50 regarding which of the two models they prefer.

One new crowd-pleaser first offered in 2016 is a toilet. Daher calls this the "Elite Privacy" option. For an extra \$36,635 and the loss of the two aft-most cabin seats you get something



never before available in a TBM: airborne dignity in your time of need. The toilet itself is your basic electric flushing marine portable variety shielded in a clever surround with a privacy screen with an illuminated mirror. The surround deploys at the touch of a button. When not in use, it converts to a passenger bench seat. The apparatus and surrounding structure can be installed and removed as needed, allowing the passenger cabin to be configured for three to four passengers behind the cockpit, depending on mission requirements.

Other new goodies on the TBM include better seat sculpting and cushioning, heated seats, Ultraleather on the seat fairings for better wear, seatbelt airbags for the cockpit seats, backlit cabin temperature controls, cabin USB charging ports, and an additional storage cabinet (albeit for \$4,900). The standard color options have been expanded to 32.

It's hard to imagine what else Daher could do to make this airplane more appealing. Well, OK, they could lower the price and punch out the fuselage a few inches. But they really have no reason to do so. Used TBMs hold their value better than light jets and the company expects to sell out just about the limit of its production capacity this year. After three decades, the TBM is more than relevant, it's thriving. **BJT**



2018 TBM 910 & 930 at a Glance

| | | |
|------------------------------|-------------------|---------------|
| Base price | TBM 910: \$3.751M | |
| | TBM 930: \$4.046M | |
| Crew | 1-2 | |
| Passengers | 4-5 | |
| Max. takeoff weight: | 7,394 lb | |
| Max. payload with full fuel: | 891 lb | |
| Max. cruise speed | 330 kts | |
| Long-range cruise speed | 252 kts | |
| Max. range* | 1,730 nm | |
| Cabin | Width | 3 ft, 11.6 in |
| | Length | 13 ft, 3.5 in |
| | Height | 4 ft |
| | Volume | 123 cu ft |
| Baggage | 30.3 cu ft | |

*Assumes one pilot, no passengers, full fuel, cruise power, 45 minutes NBAA reserve. Source: Daher



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Cabin Comforts

The latest technology and furnishings for business aircraft can make your ride more comfortable and enjoyable than ever before.

by Mark Huber

Business aircraft and component manufacturers and completion centers continue their quest to make the environment at 40,000 feet feel just like home. Thanks to new products ranging from high-tech cooktops and more comfortable seats to higher-resolution monitors and faster Wi-Fi, life at altitude keeps getting better. Here are some of the latest innovations that will increase the joy of private jet travel.



AviationGlass & Technology
AeroGlass

Steak au poivre in the stratosphere

Rewarmed food, no matter how noble the origin, can never compare to freshly prepared. That's the impetus for Lufthansa Technik's induction cooktop, which facilitates the preparation of pan-fresh food, from steaks to eggs to sautéed veggies and sauces. The platform fits into most aircraft galleys and features a clever all-in-one design that includes a power unit, an exhaust fan, and special cover and locking systems to ensure that cookware remains in place during turbulence. The cooktop works not only with pots and pans but also with a special rice cooker and a toaster.



Luftansa Technik cooktop

Sharper views

Aircraft Cabin Systems has launched a line of ultra-high-definition 4K monitors in sizes from 15 to 75 inches. Depending on size, each 1080p monitor can support two or three internal modules and the SDI and HDMI modules include one and two inputs, respectively. The manufacturer assembles monitors to meet customer requirements.

930 turboprop singles. The feature is activated via a master control in the cockpit; after that, each passenger can choose light or moderate heat settings.

You won't stand for this

Last year, Embraer introduced new seats for its bestselling Phenom 300E light jet and in May it did the same for its midsize Legacy 450 and 500. The 300E seats feature extendable headrests with bolsters, extendable leg rests, and retractable armrests; and the seatback has been broadened for greater support. The coverings can easily be removed for repair or replacement. The seats have improved backrests and headrests and offer more stitching, leather, and color options than their predecessors.

That warm, toasty feeling

Automobiles have been available with heated seats for years but the convenience is just now finding its way into small private business aircraft. This year, Daher announced that it was making heated seats standard on its 2018 model TBM 910 and

No more stains

Lantal's TEC-Leather looks like leather, but holds its shape better, cleans up easier, covers cushions more



Gogo Business 4G

Cabin Comforts

smoothly, and is lighter and less expensive. The material is based on an elastic polymer that stands up over time and resists stains and fungus.

A better lavatory floor

There are places on an aircraft where you don't want carpeting—like in the lav. Still, you want a sense of style. Infinity Woven Products may have just the thing: luxury woven vinyl flooring. It's lightweight, easy to clean, cushioned, and—important for a lav environment—antimicrobial and able to repel water fast.

A “Nuage” for seating

Bombardier's new flagship, the large-cabin, long-range Global 7500, will feature a seat that the company calls “Nuage” (French for cloud). It took seven years to develop and is designed to conform to the natural predilections of the human form better than earlier seats. When the seat back reclines, the rear of the seat pan drops or tilts to provide a more relaxing position. The headrest not only raises and lowers; it can tilt, and you can adjust the angle to your preference. The seat pan is designed to accommodate passengers of various heights. A leg rest can be deployed at the passenger's option. The swivel mechanism is built into a floating base, which eliminates the need for traditional seat rails. The seat is covered in sculpted foam with a hard-shell back, and there's built-in aisle-side storage for books, magazines, and

tablet computers. You can personalize your seats with deeper seat pans for taller passengers, various shapes of armrests and headrests, and diverse types of upholstery and stitch patterns.

Can you hear me now?

Gogo Business Aviation's Avance L5 uses the company's 4G network to provide a high-speed, low-cost Wi-Fi solution for business aircraft. Introduced last year, the system combines Gogo's network with hardware and software to create an integrated inflight connectivity and entertainment platform with enhanced network capacity. Avance allows for live streaming of video and audio, video conferencing, on-demand movies, personal smartphone use, real-time data for cockpit apps, and remote diagnostics and support while in flight. Gogo expects the system to be installed on 500 aircraft by the end of 2018.

Mirror image

AviationGlass & Technology has developed AeroGlass mirrors, transparencies, and decorative panels for cabin interiors that are 50 percent thinner and 25 percent lighter than traditional polycarbonate products. Available in a wide range of colors, they provide 99.9 percent transparency and scratch and UV resistance. This year, the company unveiled a translucent mirror that transforms with a touch of a button into a screen that can display passenger announcements.



Content is king

In March, FDS Avionics announced that it was bringing the first-ever wireless high-definition streaming content to business jet passengers via its do Capsule system. The company has secured movie rights from six big Hollywood studios via a licensing agreement with Global Eagle, a leading content provider to the airline industry. Aircraft operators insert a solid-state drive into the do Capsule, enabling up to 22 passengers to simultaneously navigate and watch any of hundreds of high- and standard-definition titles. Three entertainment packages respectively offer 90, 180, and 360 films.

Control yourself

Bombardier and Lufthansa Technik are harnessing newfangled OLED panels—which are made from carbon-based materials and are thinner and emit more vibrant light than traditional LCDs—to the passenger controls on the “nice Touch” cabin-management system for the Bombardier Global 7500. The system features a new compact side-ledge dial that you can use to control entertainment options, local lighting, and window-shade settings. It provides on-demand audio and video; supports Blu-rays, DVDs, and CDs; and features 40-inch displays, 4K picture quality, and surround sound. The full-spectrum lighting system has preset options from up to 200 shades with day/night simulations to mitigate jet lag. The system is built on a high-bandwidth fiber-optic backbone with two wireless dual-band access points and incorporates three Bluetooth 4.0 modules plus USB 3.0 ports at each seat that enable passengers to charge devices or transfer content to or from the airplane. It is compatible with iOS and Android devices and supports standard Ka-band cabin connectivity. **BJT**



DAVID McINTOSH

Tim Fagan, Bombardier manager of industrial design, in the Nuage seat

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Embraer's Phenom 100

This light jet received justifiable criticism when it debuted, but the manufacturer addressed its problems. Today, it deserves high marks for its speed, comfort, and economical operation.

by Mark Huber





Embraer first stuck its toe in the corporate jet world in 2002 with the Legacy 600, a denuded ERJ135 regional jet refitted with an executive interior. The exercise shouldn't have been much of a stretch, but there was a learning curve and the airframer got a few things wrong out of the gate: there were interior-fit-and-finish and cabin-noise issues and airworthiness directives that covered everything from the passenger seats' floor tracking to leaking fuel.

As Embraer built more airplanes, it implemented fixes and by the time the Legacy 650 rolled around in 2010 the company had corrected most of the problems. Although the aircraft's early flaws helped to limit its success, Embraer's expertise in the airliner world helped its business jet line achieve dispatch reliability above 99 percent.

While one would have thought Embraer would have taken the lessons learned on the 600 and applied them to its first "clean sheet," purpose-

designed business aircraft, the Phenom 100 light jet, the new model was not without its own set of problems.

When deliveries of the then-\$3.18 million Phenom 100 began in 2008, they faced a series of quality and fit-and-finish issues. Let's start with the cabin. The first iteration of passenger seat, with its signature askew headrest, was widely and justifiably derided on all counts—for styling, comfort, function, and reliability. The complaints were significant. As former Embraer Executive Jets president Marco Tulio Pellegrini noted in 2016, "The seat is the customer touchpoint. If he feels comfortable, he is pleased. If he is not, he complains a lot."

There were other cabin irritants as well, such as the unpleasant noise level of the two-zone environmental-control system fans and trim pieces that fell off periodically. One husband-and-wife pilot couple who were early Phenom 100 customers praised its flying characteristics, but when asked about the cabin said, "We never sit back there, anyway."

Its problems notwithstanding, the cabin did have a lot going for it. Embraer had taken a quantum interior-design leap, hiring BMW DesignworksUSA to create a light and airy space that felt considerably bigger than it was. The cabin design incorporated upscale automotive-style accents and featured conveniences typically found in larger aircraft. It included a genuine airstair door, LED lighting, single-piece sidewalls and headliners, and retractable cup holders that were wide enough to fit personal electronic devices and cell phones. Storage nooks, AC power outlets, headset jackpoints, lighting and temperature controls, MP3 plugs, and speakers were integrated into the side-ledge. Audio on demand and satellite



USED AIRCRAFT REVIEW

radio were available. In the forward cabin, you could install a modestly sized refreshment center that was adequate for small beverage containers, a limited amount of glassware, ice, and snacks.

But the cabin issues paled next to the early systems problems, which included air-conditioner compressors, generators, and trim motors that died prematurely, cockpit windows that tended to fog up during descents, an erroneous flap-fault indicator, and a brake-by-wire system that required some redesign, having contributed to a handful of runway overrun incidents and blown tires.

Embraer addressed these faults and continues to improve the Phenom 100 series. The company developed a new passenger seat with supplier DeCrane Aerospace, featuring improved lumbar support and cushioning, a retractable armrest, and a partially folding seat next to the cabin entry door. Later-model Phenom 100s come with Embraer's in-house-manufactured seats. Embraer also equipped Phenom 100s with a new flap-controller unit. It quieted the cabin fans. It also solved problems with the brake-by-wire system and errant brake-warning CAS (crew alerting system) messages with a software fix, by redesigning the brake-control unit and by altering the pedal position and feel to bring it in line with the feedback pilots get with conventional mechanical/hydraulic brakes. Beginning in 2013 with the 100E model, Embraer began equipping the aircraft with multifunction wing spoilers that



enable slower descents, enhance maneuverability, and improve braking on the ground.

Despite its many teething problems, the Phenom 100 has sold relatively well, owing to its larger cabin, which can seat six passengers, and faster, 390-knot cruise speed—a good 50 knots faster than a Cessna Citation Mustang. (The latest version, the 100EV, cruises at 405 knots, climbs faster, and has better high/hot runway performance.) You can also option features on the Phenom that you cannot get on most other aircraft in its class—like a lavatory with a solid privacy door. The engines and avionics make for attractive economics and operational simplicity.

Power comes from Pratt & Whitney PW600 series engines rated at 1,695 pounds of thrust each. They incorporate engineering and manufacturing advances that make them cheaper to build and easier to fix than engines on older light jets, such as Cessna's CJ series. For example, mechanics can perform a midlife inspection on a PW600 without removing it from the wing, which means they can do the job in one eight-hour shift rather than over several days.

The 100's "Prodigy" glass-panel avionics system is built around the Garmin G1000 suite, which is now found on everything from piston singles to midsize jets. It features three interchangeable 12-inch flat-panel displays—primary displays for each pilot position and a center multifunction display. The system integrates all primary flight, navigation, communication,

terrain, weather, engine-instrumentation, and crew-alerting data.

You can buy good used Phenom 100s for \$2 million or less, make minimal upgrades, and have a solid performer that is only 10 years old or less. Improvements to consider include premium slide, swivel, and recline single executive seats, similar to those aboard the larger Phenom 300; the GoGo Biz Wi-Fi airborne connectivity system; and updating the Garmin-based Prodigy glass-panel flight deck to the G1000 NXi configuration with new displays, faster processors, and a host of new safety and convenience features that significantly reduce pilot workload. This is particularly important if you plan on operating single pilot.

Today an updated, used Phenom 100 is tough to beat in terms of acquisition and operating costs, speed, and—finally—comfort. The aircraft is widely used in the air charter business and posts excellent dispatch and high utilization rates, both helped along by superior support and Embraer's history as a manufacturer of commercial airliners. (Embraer received the top score in the most recent annual product-support survey in our sister publication *Aviation International News*.) While it may have had a rocky start, the aircraft, and Embraer, ultimately found redemption. **BJT**

Mark Huber (mhuber@bjtonline.com), an aviation industry veteran, has reviewed aircraft for **BJT** since 2005.

Specifications & Performance

| | |
|---------------------------------|----------------|
| Range* | 1,064 nm |
| Max cruise speed (early models) | 390 ktas |
| Cabin dimensions | Height: 4.9 ft |
| | Width: 5.1 ft |
| | Length: 11 ft |

* with four passengers (200 lb each, including baggage), NBAA IFR 200 nm reserve

Economics

| | |
|---------------------------------|-----------|
| Total variable flight cost/hour | \$1,120 |
| Total fixed cost/year | \$233,514 |
| Total cost/year** | \$841,772 |

**Includes variable and fixed costs plus market depreciation and assumes usage of 175,000 nautical miles and 543 flight hours

Source: Conklin & de Decker, Orleans, Mass.

Visit **BJTonline.com** for a searchable aircraft guide that contains detailed performance, specifications, and expense data for this and all other popular business aircraft.

Embraer Phenom 100 compared with other aircraft

| Model | First year produced | Variable cost/hour | Seats exec/max | Range (nm) | Normal cruise (kt) | Max takeoff weight (lb) |
|-------------------|---------------------|--------------------|----------------|--------------|--------------------|-------------------------|
| Phenom 100 | 2008 | \$1,120 | 5/7 | 1,064 | 390 | 10,472 |
| TBM 850 | 2008 | \$777 | 5/6 | 1,173 | 320 | 7,394 |
| Citation Mustang | 2006 | \$1,123 | 4/5 | 743 | 340 | 8,645 |

Assumptions: Aircraft are 2010 models. Jet fuel \$4.30/gal; variable cost: fuel plus maintenance reserves; four passengers; NBAA IFR 200 nm reserve fuel; passenger weight 200 lb includes baggage; one pilot. Max cabin altitude, 8,000 ft. Sources: Conklin & de Decker Life Cycle Cost, Conklin & de Decker Aircraft Performance Comparator.

A prebuy crunch

The good news is that preowned-aircraft sales activity is on the rise. But that has helped to lengthen the time it takes to get a prepurchase inspection.

by James Wynbrandt

If you think finding the airplane of your dreams or a buyer willing to pay the asking price for your aircraft presents a challenge, try locating a facility where you can get a prepurchase inspection. The uptick in preowned-market activity, demand for ADS-B installs, and a technician shortage are among the factors creating a prebuy crunch.

“It’s very, very difficult right now to get slots,” says Brian Proctor, CEO of the Mente Group brokerage, and president and chairman of the National Aircraft Resale Association (NARA). “The biggest threat to transactions is [the lack of] prebuy facilities,” he says.

Debi Cunningham of West Star Aviation confirms the crunch. “The only advice to give right now is to attempt to preschedule any event when possible and prepare for longer down times,” says Cunningham, a vice president of marketing at the

maintenance, repair, and overhaul (MRO) company.

Adding to the strain: operators that typically perform scheduled maintenance in-house but need ADS-B installations are having both done simultaneously at MROs to minimize downtime. “That’s consuming capacity [that could otherwise be used] for prepurchase inspections,” says Michael Parrish, vice president of maintenance, paint, and interior sales at Elliott Aviation. “It’s not just a question of manpower, it’s also hangar capacity,” he adds.

Even if you can get a slot, a facility might prove unable to complete inspections in the agreed-upon timeframe, leaving potential deals in limbo. Janine Iannarelli, president of the Par Avion brokerage, says a Falcon she’s representing is undergoing a prebuy at a well-regarded facility, and the inspection

has extended beyond its scheduled completion date. “They are overwhelmed in their shop, and they are borrowing people from one project to work on another,” Iannarelli says.

When shopping for an inspection facility, Iannarelli suggests, principals should ask, “How do you manage communication with your clients so they have access to data about what is being done on the aircraft in a timely fashion—meaning today or tomorrow—without having to pick up the phone every day?”

If you can get a slot, also, keep in mind that MROs typically lack the resources to perform upgrades and refurbishments that prospective purchasers often schedule in conjunction with a prebuy. You may have to postpone such improvements, and if you’re considering a project airplane

purchase, pay careful attention to a shop’s estimated timeline.

Parrish expects ADS-B–driven work to prolong the slot deficit to the Jan. 1, 2020 equipage mandate date and beyond. West Star believes “a shortage of technicians is the primary issue right now,” Cunningham says, and the company puts its hopes in efforts like Senate Bill 2506, an aviation tech-development program, “to ensure that the 120,000 new technicians that the industry will need over the next two decades are available.”

Meanwhile, with guaranteed inspection slots for 2018 mostly spoken for, Proctor says NARA is in discussions with MROs about reserving slots in 2019 for its members. In addition, he says, NARA—whose members include some of the industry’s largest brokers—is developing guidelines that would simplify prepurchase inspections and make them “minimally invasive.”

“We may see a change in the way people buy airplanes,” should prepurchase protocols become less intrusive, Proctor acknowledges. “The market for pristine preowned airplanes will be better [demand-wise], because buyers can accept risk there,” he says. “But buyers of older airplanes will be less willing to pay full price. It you think the worst case downside risk on a Challenger 300 is \$350,000, I believe that will impact the way you negotiate the purchase.”



SOME POPULAR PREOWNED MODELS

| | | PHENOM 300 | LEARJET 40 | GULFSTREAM G200 | FALCON 7X | GLOBAL EXPRESS XRS |
|----------------------------------|-------------------------------------|------------|------------|-----------------|-----------|--------------------|
| Number in Service | | 450 | 132 | 247 | 278 | 165 |
| On the Market | Number for sale | 16 | 10 | 25 | 20 | 14 |
| | Avg. days on market | 235 | 297 | 399 | 334 | 447 |
| | Avg. model year | 2013 | 2006 | 2005 | 2011 | 2009 |
| | Avg. asking price (millions) | \$6.91 | \$2.20 | \$4.61 | \$24.09 | \$19.05 |
| Sales in 2nd Quarter 2018 | Number of aircraft sold | 5 | 2 | 11 | 15 | 5 |
| | Avg. days on market | 256 | 90 | 202 | 341 | 290 |
| | Avg. model year | 2013 | 2004 | 2006 | 2011 | 2008 |
| | Avg. sale price (millions) | \$6.55 | \$1.80 | \$4.15 | \$23.50 | \$17.02 |

Data as of June 14, 2018. Source: AircraftPost.com



FOTOLIA MONTAGE: JOHN A. MANFREDO

Bizav's climate-change response gets back on track

Sustainable fuel leads to renewed calls for carbon neutrality.

by James Wynbrandt

Efforts to reduce business aviation's carbon footprint—loudly promoted a decade ago but seemingly soon forgotten—are back on track. The most visible sign of this is a report-cum-guidebook on sustainable alternative jet fuel (SAJF) that an industry consortium released at the 2018 European Business Aviation Convention and Exposition (EBACE) in Geneva in May.

Meanwhile, the scheduled implementation in 2021 of a plan by the International Civil Aviation Organization for reining in carbon emissions has renewed a focus on upcoming regulatory requirements and costs. (The ICAO

plan is known as CORSIA, an acronym for Carbon Offsetting and Reduction Scheme for International Aviation.) Concurrently, carbon-offset programs continue to evolve and provide ways for individuals and organizations to compensate for their emissions of greenhouse gas (GHG), which contribute to climate change.

One important step came in 2009, a year after the first test flight using SAJF. That's when industry representatives, led by the General Aviation Manufacturers Association (GAMA), committed to achieving 2 percent annual improvements in efficiency from 2010 until 2020, carbon-neutral growth from 2020

onwards, and a 50 percent reduction in carbon emissions by 2050, relative to 2005.

Meeting these goals will require upgrades in operations, infrastructure, and technology, as well as market-based measures. Operational changes will need to include better flight planning, one-engine taxiing, and reductions in aircraft weight. As for infrastructure, modernization of air traffic control and air traffic management is the focus. We'll also need to see technology advances, such as more efficient engines and airframes and sustainable alternative fuels; and market-based measures, like emissions-trading plans and carbon-offset programs and subsidies.

Among all of these advances, the development and deployment of SAJF (*see sidebar*) has the potential to offer the biggest bang for the buck in reducing GHG emissions, according to the *Business Aviation Guide to the Use of Sustainable Alternative Jet Fuel*. At the guide's release, the consortium members—GAMA, the International Business Aviation Council, the National Air Transportation Association, the National Business Aviation Association, and the European Business Aviation Association—signed a declaration of commitment to the goals the industry set for itself in 2009.

Currently, you'll find SAJF at only a few airports, including Los Angeles International; Oslo and Bergen, Norway; and Stockholm, Sweden. This year, Geneva Airport will add SAJF to all jet fuel supplied there and its continual availability will spread to Australia, with Brisbane's airport pledging to dispense SAJF in all its jet fuel sales.

SAJF is now used in blends with conventional jet fuel, not just because of its limited supply, but to maintain "a minimum level of aromatics," whose content varies with the SAJF product. Aromatics, hydrocarbons derived from crude oil, improve performance of fossil-based fuels. It's expected that "higher blend limits will be approved in the future, and that some alternative types may contain a full suite of hydrocarbon molecules that fully mimic those found in jet fuel," and may not require any blending, according to the guidebook.

Technical barriers to producing SAJF in quantity have been overcome; there are now five approved "pathways" for converting feedstocks into jet fuel, and more methods are under review. But a big stumbling block, says the coalition, is lack of commercial-scale investment. The guidebook aims to create pressure to step up such investment.

Meanwhile, the consortium's message is that SAJF works, is compatible with Jet A and current delivery systems, and is approved for use by all engine and business aircraft manufacturers. (This differs markedly from the status of an FAA-led effort to develop an unleaded fuel to replace 100LL for piston aircraft, a program recently halted temporarily, reportedly because of issues with the fuels.)

In fact, more than 100,000 flights operated by aircraft manufacturers, airlines, and other parties have used a blend of conventional fuel and SAJF. Gulfstream Aerospace and United Airlines both inked three-year purchase agreements with Alt Air for SAJF that began in 2016. Meanwhile, manufacturers such as Bombardier, Embraer, Dassault, Gulfstream, and Textron Aviation are helping their

operators increase their use of SAJF, according to the consortium, with several undertaking high-profile SAJF-powered flights to promote the fuel's availability and efficacy.

While the world awaits a greater supply of SAJF, market-based measures to mitigate aviation's impact on climate change continue. In 2016, the ICAO reached a global agreement on the aforementioned CORSIA plan, which seeks to reduce aviation's carbon emissions as part of a larger program focused on new technologies, air-traffic-management modernization, and operational improvements. The plan aims to limit the growth of GHG emissions from 2021 onward via a carbon-offsetting mechanism.

Under the CORSIA requirements, some operators will have to offset carbon emissions from international operations above their 2020 levels by purchasing emission credits, or by buying alternative fuels to lower their emissions and resulting offset costs. (Most business aircraft emissions and usage fall below allowable emissions levels, rendering them "small emitters" exempt from these

The consortium's message is that SAJF works, is compatible with Jet A and current delivery systems, and is approved for use by all engine and business aircraft manufacturers.

requirements.) CORSIA, which takes effect in 2021, is expected to preempt the European Union Emissions Trading Scheme, which requires aircraft operating into or within the EU to track and report their emissions and pay for emissions credits if they exceed limits set by the EU.

Some fuel companies offer additional ways for customers to reduce their carbon footprints. Air BP's Target Neutral carbon-emissions program, for example, combines emission reduction and offset strategies. "Once we've helped our customers to reduce their

What Is SAJF?

Sustainable alternative jet fuel (SAJF) is a general term for non-petroleum-based jet fuels, which have two key characteristics:

1. They are sustainable, capable of being continually and repeatedly created without depleting natural resources, while mitigating contributions to climate change.
2. They are truly alternative, in that they are processed into jet fuel in an alternative manner, including via thermochemical, biochemical, and catalytic production methods, and are made from renewable materials—such as used cooking oil, plant oils, solid municipal waste, purpose-grown biomass, and agricultural residues. (Not all alternative fuels are sustainable. Corn-derived ethanol, for example, is an alternative but non-sustainable fuel, as its use impinges on corn's availability for food or increasing its supply, which creates a net GHG increase.)

Of course, SAJF must have the same characteristics and qualities—for example, energy density, freezing point, volatility, viscosity, and thermal stability—as conventional fuel. That's to ensure that it provides equal performance and doesn't compromise engine operations, and that

it's compatible with fuel-distribution-system requirements. SAJF is envisioned as a drop-in replacement, meaning that it can be blended with conventional fuels, as it is now, or can be used by itself, and standards have been established to ensure it meets these benchmarks.

SAJF creates a net reduction in carbon dioxide emissions across its life cycle, even when you take into account emissions generated during its production, transport, refinement, and distribution. Compared with fossil fuels, moreover, it provides significant reduction—typically 50 to 80 percent—in overall carbon dioxide life-cycle emissions. Additionally, with fewer impurities, such as sulfur or complex hydrocarbons, SAJF results in even greater reductions in sulfur dioxide and particulate matter emissions.

As for how much difference SAJF can make, a large-cabin business jet on a 1,000-nautical-mile mission might burn enough fuel to produce nearly 22,800 pounds of carbon dioxide. If the 30 percent SAJF/70 percent conventional fuel blend currently produced at the Alt Air refinery in California were used for the same mission, emissions would drop about 4,100 pounds, or 18 percent, on a life-cycle basis. —J.W.

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carbon impacts, then we move to the carbon-offsetting element,” says Neil McGuinness, global offer development manager for Air BP.

Through offset programs, customers fund environmentally and socially beneficial programs shown to lead to long-term reduction in carbon emissions. Global standards and watchdog groups such as the Gold Standard have been created to audit and certify programs that purport to meet these goals. If you're considering an offset program as part of a carbon-reduction plan, ensure that it has been certified by an accredited standards agency.

“Over the past decade, the standards, the best practices, and the framework [of offset projects] have all matured, and there are internationally recognized best practices and audited processes for high-quality offsetting,” says Robert Stevens, head of partnerships at U.K.-based ClimateCare, a major provider of carbon-offset programs and services. ClimateCare has been the International Air Transportation Association's carbon-offset partner for the last decade, and “within that context, we have seen a steady increase in the number of airlines offering voluntary offset programs to passengers.”

Air BP itself is “independently certified carbon neutral in our inter-plane fueling operations around the world,” according to McGuinness; and it recently signed carbon-offset agreements with Signature Flight Support and U.K.-based charter broker Victor. Customers purchasing Air BP fuel at a Signature FBO will now receive offsets for the fuel, as will anyone who books a charter flight through Victor.

The actual costs of SAJF can vary greatly, and providers hesitate to give exact numbers, but the price is generally “higher than [for] traditional fuel, and this impedes its wider use,” the consortium's guidebook notes. However, costs are expected to decline as more is produced and distribution channels are optimized. Then again, the true cost of conventional jet fuel is largely unknown. We see the price per gallon at the pump, but what is the cost in climate change and the disruption it can cause?

As an end user, you can't do much now about SAJF besides lobby for its use and talk up its benefits. According to the guidebook, these include the fact that it can be a more efficient than conventional jet fuels, and that it can help meet personal or corporate social-responsibility objectives. **BJT**

Bizav's Skeptical View of SAJF

If supplies of sustainable alternative jet fuel are limited, so is the business aviation community's confidence that it will play a role in operations in the near term. A JetNet iQ survey of some 500 business aviation professionals in about 50 countries released in the first quarter of 2018 found that 60 percent of respondents disagreed either strongly or somewhat with the statement that they would “seriously consider flying with alternative jet fuels in 2018.” More than 15 percent were uncertain while only 12 percent strongly agreed. The responses were strikingly similar from operators of small, medium, and large jets. —J.W.

James Wynbrandt (jwynbrandt@bjtonline.com), a multiengine instrument-rated pilot, is a longtime **BJT** contributor.

READY FOR TAKEOFF

This recurring editorial feature spotlights aircraft that are for sale at press time. For this issue, we asked dealers to tell us about aircraft they're currently offering that they consider bargain-priced. BJT's editorial department selects aircraft for inclusion and the magazine receives no compensation in exchange for coverage. Brokers wishing to have their inventory considered for this department should email readyfortakeoff@bjtonline.com.

Recently Upgraded Aircraft

↓ 1999 Boeing Business Jet

This low-flight-time aircraft (just 4,070 hours) has had more than \$11 million in recent upgrades, including a cabin refurbishment in 2017, a low-cabin-altitude upgrade, an Inmarsat SwiftBroadband upgrade, and FANS 1/A and ADS-B Out upgrades. In addition, it now has nine PATS tanks, making it the longest-range preowned BBJ on the market.

Asking price: \$34.995 million

Broker: The Jet Business



↓ 1994 Gulfstream IV-SP

This Wi-Fi- and ADS-B-equipped Gulfstream, which has accumulated only 4,189 flight hours, received a paint job and new interior in 2018. The cabin includes forward four-place club seating; four-place mid-cabin conference table seating; and, in the aft cabin, two-place club seating and a four-place divan. There are forward and aft LCD monitors, an aft galley, and two lavatories.

Asking price: \$5 million

Broker: Dumont Aviation



THE RESULTS ARE IN!

BJT'S 8th annual Readers' Choice Survey attracted significantly more responses than any of our previous polls. Keep an eye out for our October/November issue, where you'll find all the results, including how our subscribers rate aircraft manufacturers and models as well as charter, jet card, and membership providers. (And if you participated in the survey, watch your email inbox for the promised prepublication copy of the results, coming in September.)

**BUSINESS JET
TRAVELER**
8th annual Readers' Choice Survey

JAGUAR'S I-PACE



This versatile model, which debuts in the automaker's 2019 lineup, could help to further popularize the electric-vehicle category.

by Ian Whelan

Jaguar's new I-Pace makes a compelling case for electric vehicles. It is among the most impressive cars I've driven because of its blend of practicality and performance on and off road. Electric propulsion makes it that much cooler. At the moment, it is the only EV that's comparable to Tesla's Model X and Model S for performance and range. Its 90 kWh lithium-ion battery pack provides a 240-mile range, and you can charge it up to 80 percent in 40 minutes with a 100 kW DC fast charger.

Electric vehicles have already moved from curiosities for early adopters, who mostly charged at home, to practical mainstream transportation. It was only six years ago when Tesla introduced its Model S, showing what a premium EV could be and waking up established automakers. Charging networks have since sprung up and continued to expand, and drivers can now take long trips without worry in many areas.

While it's clear that electric vehicles benefit the environment, other bonuses result from how designers and engineers can package them. Since they don't need to work around internal-combustion drivetrains, they're freed

up to move interior spaces, components, and weight. Electric motors can also provide plenty of performance flexibility with their abundance of torque.

For a day, I hustled the 394-hp, 512-lb-ft all-wheel-drive I-Pace along twisty mountain roads, diverted off road, waded through a stream, scaled steep inclines, and lapped a track at racing speeds in the Algarve region in southern Portugal. The car was thrilling to drive in every situation, even for an auto enthusiast like myself who still loves the smell of gasoline. It shows what an established luxury automaker is able to do with EV technology, and where the future lies for vehicles overall.

The packaging of the I-Pace differs from that of Jaguar's traditional models. Because they didn't need to accommodate an internal-combustion drivetrain, the designers used a cab-forward design reminiscent of the C-X75 concept car from 2010. They also pushed the wheels to the far corners, which allowed for an interior volume comparable to that of a long-wheelbase Jaguar XJ, the company's flagship sedan. The



ALL PHOTOS COURTESY OF JAGUAR

body structure is 94 percent aluminum, with the battery pack arranged below the floor of the passenger compartment, between the axles. This configuration provides a center of gravity that's lower than that of the Jaguar F-Pace SUV and a 50:50 weight distribution. The large interior, which is appointed with beautiful materials, exudes the quality you'd expect from a luxury car.

The designers utilized clever aerodynamic details, such as a slot at the top of the grille that flows back through a vent in the hood. This keeps the airflow clean against the windshield and over the roof. The underside of the car is smooth and leads to a functional diffuser that sits at the base of a Kamm tail design. The rear-end treatment helps air flow off of the body, minimizing turbulence and drag. The car's drag coefficient is .29, according to Jaguar designer Wayne Burgess, lower than that of any other Jaguar up to this point. While Tesla's Model X claims .24, Burgess says that that car's aero creates lift at high speeds and that lack of airflow to the cooling system can result in overheating in some conditions, while the I-Pace can run on the track for sustained periods.

Idrove the car on a route that tested its abilities in varied conditions. The navigation screen showed what the expected level of charge would be at each waypoint. When setting a destination, the navigation takes into account factors like topography, traffic, weather, and available charging stations. The car will also learn your driving style so that it can improve expected range estimates over time.

As I rolled off, one feature I noticed was the energy regeneration on deceleration. Take your foot off the accelerator and the car immediately slows, as though the brakes have been applied. The effect is much more apparent than on any hybrid vehicle that I've driven, and it delivers up to .2g of deceleration. In fact, you can drive almost completely with one pedal, hardly ever using the brakes. If needed, the brakes will add another .2g of deceleration. After only a few minutes behind the wheel, I got used to the feel and enjoyed it. You can turn this setting down, but I'm not sure why you'd want to because doing so would reduce the amount of kinetic energy that the motors can harvest back to the battery.

After navigating some tight village roads, I got onto the motorway to see what the I-Pace could do there. Its dual electric motors provide 394 hp and 512 ft-lb of torque in total to both axles. Those are big numbers, and because electric motors produce their full torque from zero



rpm, the effect of tipping into the accelerator is immediate. There is no waiting for revs to build and reach a power band. Smooth power surged as long as I kept the pedal down, and that feeling was intoxicating.

The car is capable of sprinting to 60 mph in 4.5 seconds, and because it's so quiet, it's easy to drive a lot faster than you think you're going. There's only a slight electric motor whoosh on acceleration and whine on deceleration. To provide some aural feedback, a subtle blend of internal-combustion rumble and Jetson's flying-car warble is piped into the cabin. You have a few settings to choose from, and the system provides a bit of active noise cancelling at the lowest setting.

Once I reached the mountain roads, the dynamic ability of the vehicle came to the fore. The I-Pace weighs 4,784 pounds, making it much heavier than any sports car, but Jaguar has managed to hide its bulk. The variable air dampers with optional Adaptive Dynamics keep body roll to a minimum as it senses the road surface and continuously adjusts to suit your driving

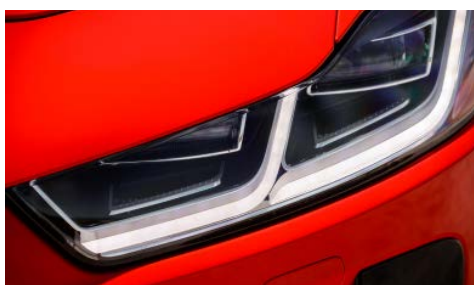
style. The front double wishbone suspension is pulled from the F-Type sports car. The I-Pace handles tight bends well at speeds that most drivers will likely never ask it to tackle. Torque vectoring helps to send power where it's needed to enhance agility, and the car rockets out of corners. Dynamic mode tightens up the steering, stiffens the air suspension, and amps up the response from the accelerator pedal, but even in Comfort mode, the I-Pace always remains composed in spirited driving. Steering feel is quite good, providing more feedback from the front end than I was anticipating, inspiring plenty of confidence. I didn't expect the car to be as entertaining as it was on such curvy roads, but this setting was where I enjoyed it the most.

The next phase of my route was off road, and the I-Pace had no problem hooking up on loose surfaces, even with summer tires. On inclines that would be difficult to walk up, all I had to do was raise the air suspension, which went up nearly two inches, and maintain a steady speed. The optional Adaptive Surface Response software controlling the motors on both axles did an amazing job of sorting out the surface and finding grip. The

When setting a destination, the navigation takes into account factors like topography, traffic, weather, and available charging stations.



Take your foot off the accelerator and the car immediately slows, as though the brakes have been applied. In fact, you can drive almost completely with one pedal, hardly ever using the brakes.



car has a 19.7-inch wading depth (the same as a Land Rover Defender), and on the course I drove, I had no problem driving down a stream. It was hard to believe that a vehicle that worked this well off road was the same one I was tearing through mountain passes in earlier.

Finally, I ended up at the Algarve International Circuit in Portimão. An I-Pace is unlikely to find itself lapping a racetrack, but the circuit allowed me to stretch the car's legs without breaking the law. Pushing the I-Pace at racetrack speeds revealed its weight a bit more than the public roads did, but it still gripped without drama on long sweepers and tight turns. The car stayed neutral until the limit, where a touch of understeer showed itself. The instant response from the electric motors was even more noticeable as I managed my line through challenging corners. I drove for only a few laps, but the track setting showed that the I-Pace is capable of sustained hard driving without overheating or reducing power output.

The I-Pace is a well-rounded vehicle that can tackle almost any scenario while providing a luxurious experience for its occupants. Aesthetics are subjective, but I think this car's interior—even in the base model—surpasses those in the Teslas. It also undercuts them in price. The I-Pace starts at \$69,500 before you deduct any government incentives. That's \$5,000 less than a Model S and \$10,000 less than a Model X. Moreover, Jaguar is an established automaker and shouldn't have any trouble scaling up production as needed, which contrasts with Tesla's production challenges as a startup.

Tesla arguably retains an edge, for some buyers, on a few points, however. One is its Supercharger charging network, which has had a head start. Jaguar isn't planning on developing its own network and instead will rely on third-party CCS charging stations. There is a growing network, but not all stations are ready to deliver full 100 kW DC fast charging yet. As more EVs come to market, network expansion should accelerate.

The next point is self driving, which Tesla has been developing with its Enhanced Autopilot system. Jaguar didn't talk about this while I was in Portugal, but the company offers optional semi-autonomous features such as adaptive cruise control with steering assist, traffic-sign

Ian Whelan (iwhelan@bjtonline.com) is BJT's video producer and a longtime auto enthusiast. He was among a group of journalists for whom Jaguar paid travel expenses to Portugal for the I-Pace's launch.

recognition, emergency braking, and park assist. Could a future over-the-air update unlock more functionality? Autonomous driving is on Jaguar's radar as shown by its commitment to build 20,000 I-Paces for Google's Waymo driverless taxi service. The cars should appear in Waymo's fleet in 2020.

Finally, if you need a vehicle that fits seven, Tesla's Model S and Model X can accommodate you, while the Jaguar fits five in total.

That said, the I-Pace is a great car that will help expand the electric-vehicle segment by offering more choices to buyers and further normalizing the concept. Other manufacturers like BMW, Audi, Porsche, and Mercedes do have EVs in the pipeline. The I-Pace won't be the only EV to come from Jaguar, moreover, as the company and sister brand Land Rover plan to offer an electrified model in every product line starting in 2020.

The acceleration of EV acceptance has been a long time coming until recently, but the newfound commitment by automakers to get into the market means there's no turning back. Cars like the I-Pace prove that an EV can get an old-school auto enthusiast's blood pumping. I'll take one as long as I can still drive my 1987 Porsche 911 on the weekends.

BJT

Jaguar I-Pace at a Glance

| | |
|-------------------|--|
| Price | Available in four trim levels, from \$69,500 to \$85,900 |
| Powertrain | Dual permanent magnet electric motors, one at each axle |
| Battery | 90 kWh Li-ion, nickel-manganese-cobalt chemistry, liquid cooled |
| Range | 240 miles |
| Charging time | 80 percent in 40 minutes using a CCS 100-kW DC fast charger, or 10 hours using a 7-kW home charger |
| Power | 394 hp, 512 lb-ft of torque |
| 0-60 acceleration | 4.5 seconds |
| Top speed | 124 mph |
| Curb weight | 4,784 lb |
| Cargo capacity | 25.3 cu ft /51.0 with rear seats folded, plus .95 cu ft "frunk" |
| Warranty | 5-year/60,000-mile basic, 8-year/100,000-mile battery (up to 70 percent state of health) |

Source: Jaguar



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The NBAA San Jose Regional Forum will bring current and prospective aircraft owners, operators, manufacturers, customers and other aviation professionals together for a one-day event on September 6. The forum incorporates exhibits, a static display of aircraft and education sessions to help current operators, as well as those considering using an aircraft for business. Any current issues in the region will also be addressed. Visit the website to learn more and register.

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Return of the executive seaplane

The popularity of these aircraft declined after WW II. Here's why they're making a resurgence.

by Mark Huber

Antique-airplane aficionados often refer to the 1930s as the golden age of aviation. It was an era that saw a proliferation of aircraft builders and a time when airplanes were meticulously and laboriously assembled by hand; materials were expensive and labor was not. Airports, while growing in number, were still a relative rarity—the number of public airports in the U.S. has grown tenfold since then—and the aircraft of the day reflected that: many models were seaplanes (*see box*), be they amphibious or built solely for off-land operations, to take advantage of the fact that water covers 71 percent of the Earth's surface.

Technology and economics largely made business and commercial seaplanes irrelevant by the end of World War II, save for places like Alaska and Vancouver. However, today's urban land gridlock and global economic development are conspiring to make seaplanes relevant again.

Blade—an on-demand helicopter service—has a seaplane base on the banks of New York's East River. Its contractor, Tailwind Airways, provides service from the river base to executive airports at White Plains, New York and Teterboro, New Jersey; and, on New York's Long Island, to the Hamptons, Montauk, Sag

Harbor, and Shelter Island. There's also service between Boston and Nantucket, and Tailwind is looking at expanding service to Washington, D.C.; Pittsburgh, Pennsylvania; Montreal; and Toronto. Tailwind flies Cessna Caravans on amphibious floats.

St. Paul-based Wipaire, meanwhile, has been equipping seaplanes since 1960 and does a healthy business in Cessna Caravans and Twin Otters. "We're seeing increased interest in outfitting aircraft on floats with VIP interiors internationally, with a smaller uptick domestically," says Clint Cloutre, Wipaire's vice president of sales and marketing. "Individual owners and aircraft operators that provide last-mile service to exclusive properties are finding that they can improve the passenger experience by adding high-end finishes and appointments similar to what you'd find in jets. In aircraft used as luxury resort transportation, an upgraded interior smooths the transition from jet travel to seaplane and offers an enhanced customer experience. The interior can really set the tone for how enjoyable the flight is. No matter how rugged the aircraft or how far off the beaten path the destination, you don't have to feel that [you're roughing it] when you sit down inside."

Seaplanes never fell out of favor with certain resort destinations such as Bimini; Cape Air provides daily flights between that island and Fort Lauderdale and Miami and flies from its San Juan hub to St. Thomas, St. Croix, Tortola, Vieques, Mayaguez, Culebra, and Virgin Gorda. Harbour Air Seaplanes has long been a mainstay in Vancouver, with service within that market as well as to the Canadian cities of Victoria, Nanaimo, Comox, and Whistler, and to the Gulf Islands and Sechart.

Now seaplanes are gaining popularity in other parts of the world, too. Seawings offers seaplane service in Dubai, once a "flying boat" stop on the route from the U.K. to India. Seawings service cuts travel time from the UAE airport to the Dubai World Central complex by 30 minutes to an hour, depending on time of day. In Mumbai, India, Maritime Energy Heli Air Services operates seaplanes to the Aamby Valley and islands in the Bay of Bengal and plans to add two dozen more aircraft to service destinations along the country's 6,000 miles of coastline. Setouchi Holdings, parent of Idaho-based Quest Aircraft, has formed a joint venture with Island Aviation Services in the Maldives to run a seaplane service



Cessna Grand Caravan with executive interior by Wipaire

SEBASTIAN POSINGIS

featuring Quest Kodiak aircraft on Aerocat floats. Consisting of 1,200 coral islands, the Maldives hosts more than 45 seaplanes.

The worldwide seaplane resurgence has prompted aircraft manufacturers to take another look at the market. Viking Aircraft, holder of the type certificate for the Twin Otter twin-engine turboprop, began offering a dedicated floatplane version of the model, called the 400S, last year. The \$5.995 million aircraft features straight floats (no wheels) with Honeywell VFR avionics, less-powerful Pratt & Whitney Canada PT6A-27 engines (620 shaft horsepower each), and a 17-place interior.

The 400S will have special maritime-use anti-corrosion features, including drains, seals, and protective coatings. Amphibious floats are available on the 400 and add slightly more than \$500,000 to its base price. The Dornier Seastar, a \$7.21 million twin-engine turboprop amphibian certified in 1991, has

been resurrected with Chinese financial backing: an updated prototype rolled out last August. The 12-passenger Seastar cruises at 180 knots and has a 900-nautical-mile range and a service ceiling of 15,000 feet. Dornier Seaplane Company founder Conrado Dornier notes that China, due to its long coastline, large inland bodies of water, and comparatively scarce airport infrastructure, is a natural market for seaplanes. The Chinese government seems to think so as well, as it is bankrolling development of the world's largest amphibian, the 117,700-pound AG600.

While seaplanes will never replace modern jets, they can make remote or congested destinations more convenient and accessible and offer a cost-effective alternative to helicopters. A new golden age of seaplanes may be just over the horizon. **BJT**

Mark Huber (mhuber@bjtonline.com), an aviation industry veteran, has reviewed aircraft for **BJT** since 2005.



Dornier Seastar

The First Golden Age of Seaplanes

As the accompanying story notes, seaplanes first enjoyed popularity in the 1930s and early 1940s. In fact, Terminal A at New York City's La Guardia Airport was once known as the "Marine Air Terminal" and was built, in 1939, to handle seaplanes. In the 1930s, seaplanes were landing in Chicago's Burnham Harbor, next to Northerly Island, where Meigs Field would open in 1948. Los Angeles and Miami also had thriving seaplane bases.

Amphibians built for corporate use were elegant affairs. For example, the Sikorsky S-38—a 10- to 12-seat, twin-engine flying boat built beginning in 1928—featured wicker-backed seats upholstered in mohair and leather in a cabin finished in teak and brass. The passengers drank from crystal decanters. S-38 pilots and owners included billionaire entrepreneur Howard Hughes, Charles Lindbergh, and "Colonel" Robert McCormick, owner of the *Chicago Tribune*. Back then, airplanes that landed on water captured the romance of the day—both the glamor and the zest for unbridled go-anywhere exploration.

They were not fast, because their pontoons or boat-hull fuselages imposed enormous drag penalties. World War II triggered not just a massive airport-building program worldwide but also numerous aerodynamic and engine advances that hastened the march of much slower amphibious business and commercial aircraft toward obsolescence.

Boeing's massive transoceanic Model 314 Clipper, introduced in 1938 and flown by Pan Am, had a range of 3,600 miles but typically cruised at just 155 mph with a full load of 36 passengers in sleeping berths—nice to have on the 19-hour flight from San Francisco to Honolulu—and required a crew of 11. The late author Ernest K. Gann, himself a seaplane pilot, called one poky amphibian "the only airplane I ever owned that you could put in a dive, lose a cylinder, and stall out." —M.H.

Decoding cryptocurrency

Bitcoin and similar alternatives to traditional money are gaining popularity. Here's how they work, how to invest in them, and why you might want to think twice before doing so.

by Chana R. Schoenberger

Is bitcoin the wave of the future or an investment bubble? And if it's the latter, should you rush into it or other cryptocurrencies before the bubble pops?

Those are questions that some investors are asking as they watch the volatile prices of these currencies zigzag upwards, with the total value of all cryptocurrencies rising some 400 percent last year. Gains like that certainly sound appealing, but experts caution that you should research the asset class before buying either shares in a security linked to a cryptocurrency or digital coins themselves. And some advisers suggest avoiding cryptocurrency altogether until it's less volatile and government regulators have agreed on how to treat it. At the moment, it's not clear which of the thousands of cryptocurrencies will survive long enough for you to recoup an investment.

"It's hard to figure out who's going to be winners, who's going to be losers, who's going to be disruptive," says Michael Casey, a senior adviser at the MIT Media Lab's Digital Currency Initiative.

Like many people, you might not yet even be dealing with the question of whether or not to invest; you may simply be asking, "What the heck is cryptocurrency?" Answer: it's a side effect of something called the blockchain, which is a decentralized digital ledger that allows for transactions that don't have to be verified by a central authority. Instead, each transaction has to

be confirmed by people on the network, working independently.

After they verify it, and solve some complicated math puzzles, they receive cryptocurrency as a reward. Because transactions can't be changed, there's no possibility of disputes about them. And because transactions are anonymous, they can't be tracked by the Federal Reserve or any other central authority. "Once we keep a log of transactions—it doesn't have to be money; it can be exchanges

launched in 2009, during the global financial crisis. Today there are about 2,000 cryptocurrencies, all of which are designed as rewards to enable the functioning of a network that does a specific thing, such as Filecoin, which allows people to spread digital files across the internet.

Cryptocurrency systems use cryptography—think spy codes based on complicated math—to generate the coins. (That's why they're called "cryptocurrencies"—

Consider Nithin Eapen, chief investment officer at Arcadia Crypto, a New York City fund that backs new token issues and cryptocurrency-related startups: he sold his entire investment portfolio, liquidated his retirement accounts (paying penalties to do so), and put the balance into bitcoin. The only major asset he has aside from bitcoin is his house, he says. The plan is to use his firsthand knowledge as a cryptocurrency holder to learn more about the market.

"You have to be in the space to know what is happening, or you're going to miss the whole revolution," he says.

Few financial advisers would recommend anywhere near this degree of investment in cryptocurrency. They worry that risks abound, even beyond what's expected in the securities markets.

A major danger for investors is that, unlike securities such as stocks and bonds, cryptocurrencies aren't regulated. The agencies that supervise financial markets have yet to agree on a framework for which of them will regulate which aspect of cryptocurrencies. The Commodity Futures Trading Commission has said it thinks cryptocurrencies should be considered commodities, the Securities and Exchange Commission has said initial coin offerings may be regulated as securities, and the Internal Revenue Service taxes cryptocurrency holdings as property. The uncertainty and overlapping jurisdictions can



of value in many forms, like our data on the internet—we can start to take charge of our data and our assets," Casey says.

Because information recorded on the blockchain is immutable, experts think this technology could reinvent the way we manage rights, permissions, and payments. Potential applications for blockchain are unlimited, ranging from online privacy to land records in the developing world.

The biggest and best-known cryptocurrency is bitcoin, which

not, as some people think, because they're not really currencies.)

Once a niche idea, cryptocurrency has become the subject of rampant hype as companies rush to figure out what blockchain might mean to the economy. While most mainstream financial advisers don't hold them on behalf of their clients, some investors are trading cryptocurrency, particularly bitcoin, on their own.

For some, blockchain has become their singular focus.

be confusing, and potentially risky, for investors.

If you wish to get involved in cryptocurrency investing despite all the caveats, you can choose from several methods. Buying digital coins is the simplest, although getting access to the tokens can be difficult, and so can storing and trading them.

You can trade existing cryptocurrencies on online exchanges. Stick to well-known markets with strong trading volume or your trades might not execute quickly. Be prepared to pay higher fees than you would for stock trades.

If you want to hold cryptocurrencies directly, you'll need to safeguard your digital wallet, the place you store the digital keys, or passwords, to your crypto holdings. Anyone who gains access to these keys will be able to steal your money. You may want to keep those keys on a hard drive and place the drive in a safe-deposit box, says Richard Levin, the chairman of the fintech and regulation practice at Polsinelli, a Denver law firm.

If you prefer to invest in a security linked to the price of cryptocurrency and subject to securities regulation, one option to consider is buying shares in a private placement. You'll need to hold the shares for 12 months before you can trade them legally, Levin says.

One of these private placements, Grayscale's Bitcoin Investment Trust, trades at a premium to bitcoin's price, says Michael Sonnenschein, managing director of the firm, which oversees investment trusts based on cryptocurrencies. Grayscale, which has been trading since 2013, also offers shares of trusts linked to other cryptocurrencies, including bitcoin cash, ethereum classic, ethereum, litecoin, ripple, and zcash.

Grayscale charges a 2 percent annual management fee, and investors will also pay a trading commission of 1 to 2 percent

to the brokerage firm they use, Sonnenschein says.

Because the companies that issue cryptocurrencies are mainly still private, it's not possible to buy shares in a public market. You could invest in venture-capital funds that back cryptocurrency startups and those in related industries, Casey says.

Another investment strategy is to buy shares of public companies that stand to profit from a blockchain explosion. IBM and Microsoft are among the fastest movers in this area, Casey says, although their exposure to blockchain is only a small part of what the companies do. Also poised to benefit are businesses like Nvidia that make high-powered graphics processing chips, which cryptocurrency miners use to soup up their computers.

The type of cryptocurrency investment that has received the most attention recently is initial coin offerings, or ICOs, of which some 2,000 have been held. Despite the name, this is nothing like an initial public offering, in which a company sells shares on a public stock market. Instead, a company is selling tokens of its own new cryptocurrency, often before the blockchain system that uses this token as a reward mechanism is even built.

"When you're buying in an ICO, you're not investing in a company; you're buying the utility token those companies will use to operate their system," Sternberg says. If the company turns out to have a useful system, the tokens you buy may have value one day (as bitcoin does), but there's no guarantee. If not, your investment will be worthless, since it doesn't represent the debt or equity of the company.

"Failure is a likely outcome here because you're looking at highly speculative, startup-type ventures," says R.A. Farrokhnia, a professor at Columbia's business and engineering schools and the executive director of the Fintech Initiative there.

Another risk: although ICOs are typically sold without any government regulation, the SEC has said it may regulate them as securities offerings, which could invalidate these sales or result in the imposition of penalties.

"Most will likely get hit with SEC actions because they're looking like they're unregistered securities," Casey says.

One thing you shouldn't do, experts say, is become a bitcoin miner yourself, joining the network to verify transactions and receiving cryptocurrency as a reward. When bitcoin first started and the reward for verifying transactions on the network was higher than it is now, mining was an easy way to make money. But it's impossible to make a profit from mining today without understanding what hardware to buy and how to join a mining pool, a collective of miners around the world that splits all profits, says Joseph Sternberg, an adviser to several blockchain and security companies.

There's also a high risk of getting scammed—for instance, by buying an expensive mining-specific computer that the seller surreptitiously

uses himself nonstop for several weeks before shipping it to you, wearing out the processor faster, he says.

If you do make an investment in cryptocurrencies, you should include information in your estate documents about how your heirs can find your digital wallet or other crypto assets, says Mindy Stern, an estate-planning attorney at Schwartz Sladkus Reich Greenberg Atlas in New York City.

Cryptocurrency may be how we'll pay for things in the future, but it's a risky way to make money now, Farrokhnia says. He recommends investing only what you're comfortable losing and being prepared to wait five years or longer to realize returns.

"For crypto to enter the mainstream, it will take some time, certainly beyond the investment horizon of many accredited investors," he says. **BJT**

Chana R. Schoenberger
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Bitcoin in the Sky

The blockchain boom has come to business aviation.

Someday, jet owners and operators might use blockchain to keep track of aircraft registrations, fractional-ownership shares, and flight plans. But it's already possible to pay for at least some flights with cryptocurrency.

Monarch Air, a charter and fractional-jet-share jet company based in Fort Lauderdale, Florida, started accepting bitcoin and ether in November as payment for flights. So far, it's a curiosity, not a trend: fewer than 10 flights have been booked with cryptocurrency, all by American customers, says executive director David Gitman.

Clients choose a flight on the company's app or by phone, and don't pay extra fees for using cryptocurrency, Gitman says.

Having clients pay for flights in bitcoin signifies a change in the market, Gitman says: "Now you have people who are buying cryptocurrency and using it to get real value, as opposed to just waiting for it to go up so they can sell it."

But the volatile price of bitcoin means that there's only limited interest in spending it, rather than holding onto it in hopes that its value will rise. Monarch clients' desire to use cryptocurrency as a payment mechanism waned after the value of one bitcoin dropped from a high of \$19,783 in December to a low of less than \$6,500 at presstime.

"If you're holding cryptocurrency, you think it's going to go up, so you're not going to sell it now," Gitman says. Most clients who hold cryptocurrency would rather pay for their flights in dollars, rather than sell out of bitcoin at a relatively low valuation, he says. —C.R.S.

Making the switch from passenger to pilot

Tired of sitting in back? Here's what to do about it.

by James Wynbrandt

If you've been feeling an urge to turn left instead of right when you step aboard a business aircraft, you're not alone. Transitioning from passenger to pilot is more common than you might think, and whether you aspire to fly for recreation or take command of your own business jet, it's likely simpler—especially since you probably don't face the financial constraints that can keep many aspiring pilots grounded.

"Successful, mid-career professionals are absolutely an important part of the student pilot population," says Elizabeth Tennyson, vice president, aviation program operations, at the Aircraft Owners and Pilots Association (AOPA). She adds that earning a pilot's license today "is easier and more convenient than it's ever been."

If you're interested, but not thoroughly committed, "don't underestimate how easy it is to call up your local airport and schedule an introductory flight with an instructor," says Flagship Foods CFO Patrick Moulder, who earned his pilot's license in 2014. "An hour up in the air can be a pretty cool experience, even if you don't want to pursue the whole license," adds Moulder, who got interested in flying while accompanying his CEO in a Cirrus SR22 piston single on frequent business trips.

Among the requirements for an FAA private pilot license or certificate: you must be at least 17 years old and have a minimum of 40 hours of flight time, including at least 20 hours with an authorized instructor and 10 hours of solo flying; you must

Though the path to the pilot's seat has been eased, many would-be aviators still drop out en route to earning a license. Identifying the appropriate aircraft type to fly, choosing a good training facility and instructor, and establishing goals help ensure success.



also hold a third-class medical certification and a student pilot certificate and pass a practical knowledge test—aka the flight test—and a written exam.

Today, a host of interactive tools and online programs improve the learning experience and make it convenient to work toward your rating just about anywhere. If you're interested in flying only sport aircraft, or have a medical condition that precludes earning a private pilot's license, you can seek a recreational pilot's license, which requires less time and training.

"Create a schedule and stick to the schedule," advises Matt Gelfand, a Nashville businessman. Introduced to business aviation after buying a NetJets Marquis Card and Wheels Up membership following the sale of a company he'd founded, Gelfand immediately became enamored with the idea of flying himself and earned his license in early 2016. "I was hooked," he says. "I really wanted to use it to travel not just on business but with my family."

You should train in the type of airplane you plan to fly. If you intend to own an aircraft, buying it

to train in can make sense, because doing so will ensure you know your airplane well and maximize the economic benefits of ownership. For business and family travel, a range of single- and multi-engine aircraft make ideal platforms. If you're interested in aerobatics, exploring the backcountry, or using a float-plane to get around the lakes near your summer home, aircraft suited to your needs are available.


Pilot organizations like the Experimental Aircraft Association, the Seaplane Pilots Association, and AOPA have staffs available to answer questions about ownership. Join a type club for the aircraft you plan to fly. All major airplane models have such clubs, which are organized and run by owner groups. The clubs are founts of valuable information and camaraderie, and many of them sponsor safety clinics and other specialty-instruction programs.

Look for a flight school with a modern, well-maintained fleet and a standardized training curriculum. Ask pilots you currently fly with and your lift providers for recommendations. The AOPA, which lists flight schools across the U.S. on its website, recognizes superior schools and instructors with its annual Flight Training Experience Awards. The Flight School Association of North America, which has an accreditation program, lists member facilities on its website.

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|---------------|---------------|---------------|--------------|
| TYPE | CATEGORY | IN PRODUCTION | MANUFACTURER |
| All | All | All | All |
| MINIMUM PRICE | MAXIMUM PRICE | RANGE | SEATING |
| All | All | All | All |

All aircraft data provided by Cirium & de Decker


| MODEL # | MANUFACTURER | CABIN SIZE | RANGE | PRICE NEW | PRICE USED | Options |
|--|----------------|------------|----------|-----------|-----------------|-------------------|
|  5000 | Twin Commander | 233 cu ft | 1,210 nm | \$3.9M | \$262K - \$1.1M | LOG IN TO COMPARE |
|  206AL | Bell | 208 cu ft | 206 nm | \$960K | \$1.6M - \$2.0M | |
|  206B3 | Bell | 54 cu ft | 270 nm | \$2.4M | \$322K - \$1.1M | |
|  206BR | Bell | 54 cu ft | 270 nm | \$3.5M | \$302K - \$1.1M | |
|  206L1 | Bell | 73 cu ft | 240 nm | \$500K | \$400K | |
|  206L3 | Bell | 73 cu ft | 210 nm | \$1.0M | | |
|  206L4 | Bell | 73 cu ft | 253 nm | \$2.3M | | |
|  206L7 | Bell | 73 cu ft | 106 nm | | | |
|  208 Caravan | Cessna | 271 cu ft | 315 nm | | | |
|  208 Caravan/Cargo Pod | Cessna | 271 cu ft | | | | |
|  208 Grand Caravan/Carb. Pod | Cessna | 352 cu ft | | | | |
|  208 Grand Caravan | Cessna | | | | | |
|  208 Grand Caravan EX | Cessna | | | | | |
|  208 Grand Caravan EX/Carg. Pod | Cessna | | | | | |
|  212 | | | | | | |
|  214E | | | | | | |
|  214ST | | | | | | |




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TYPE
JET



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823 CU FT



RANGE
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Embraer Legacy 500 has a range of 3,193 miles. Select a departure city from the list below to update the range map.

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Range is the maximum PFD range of the aircraft knowing of Avg Range Cruise speed with all passenger seats occupied.




EMBRAER LEGACY 500 SPECS


| PRICING | | PRODUCTION | | FINANCIAL | |
|------------------|-------|--------------|---------------|-----------------------------------|-------------|
| Price New | \$20M | Year Started | 2014 | Total Fixed Cost/Year | \$164,366 |
| Price Used (Min) | \$18M | Year Ended | In Production | Total Fixed Cost/Hour | \$1,915 |
| Price Used (Max) | \$19M | | | Total Fixed Cost/Unit Distance | \$4/rev |
| | | | | Total Misc Cost/Hour | \$136,962 |
| | | | | Total Misc Cost/Year | \$544 |
| | | | | Total Crew Cost/Year | \$405,130 |
| | | | | Total Fuel Cost/Year | \$1,557 |
| | | | | Total Mo Cost/Year | \$870 |
| | | | | Total Variable Cost/Year | \$1,150,368 |
| | | | | Total Variable Cost/Hour | \$2,963 |
| | | | | Total Variable Cost/Unit Distance | \$6/rev |

All aircraft data provided by Cirium & de Decker. Cost/Rev. figures are based on 299 hours inquired per year; Cost/Unit Distance figures are based on 175,000 nautical miles traveled per year.


EMBRAER LEGACY 500 ARTICLES



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BUSINESS JET TRAVELER

Train with a senior career instructor, suggests Rick Todd, president of the National Association of Flight Instructors. Such an instructor “may cost a little more, but it’s money well spent,” Todd says, especially today: working as a flight instructor has long been a venerable tradition among pilots aspiring to airline jobs, but with hiring by commercial carriers on the upswing, such instructors may land an airline job before they finish your training. “You don’t want

if you plan to fly a heavier aircraft or even a jet.

Moulder, who flies a Cirrus, earned his license in about six months, “basically taking lessons every weekend.” His training also benefitted from flying with his boss. “We’d bring instructors with us on business flights, and I would get some [flight] time that way,” Moulder says.

Gelfand, who also owns and flies a Cirrus, completed his primary training with an intensive three weeks at the Flight Academy in Seattle,

With dedication, you can earn your pilot’s certificate in six to nine months, at a cost in the neighborhood of \$10,000.

to be changing instructors three or four times before getting your rating,” says Todd. A search engine on NAFI’s website can identify member instructors by location, ratings, type of instruction, and other criteria.

which specializes in training for the composite single. Gelfand now uses his Cirrus SR22T for business and family trips, and is second-in-command type-rated in a Beechjet 400XP twinjet that he leases for trips beyond the range of his Cirrus. (He hires an instructor to serve as pilot in command for those flights.)

Maintain a positive attitude. “I see people have a bad experience with an instructor or a school, and they lose interest,” says Gelfand, noting that he flew with several instructors before choosing one whose teaching style meshed with his needs.

“It’s a passion for me, not just a tool,” says Gelfand. “It’s a second profession. It changes the whole experience of travel for me.”

Finally, commit the required time and effort. Earning a pilot’s license is a serious endeavor. “I did a lot of book studying on my own, at night after I put the kids to bed,” says Gelfand.

Both Moulder and Gelfand point to the Cirrus Airframe Parachute System, which can deploy a parachute to lower the aircraft to the ground in emergency situations, as a primary reason they choose to fly that aircraft type.

With dedication, you can earn your certificate in six to nine months, at a cost in the neighborhood of \$10,000. You may want to continue with your instrument and multi-engine ratings, earn a commercial license, or get a type rating

Moulder’s boss, meanwhile, has upgraded to an Eclipse 500 twinjet. Moulder has no interest in a jet rating, but as the Eclipse is approved for single-pilot operation, he can sit in the right seat and help with radio work, learning more with every flight. **BJT**

James Wynbrandt (jwynbrandt@bjtonline.com), a multi-engine instrument-rated pilot and regular **BJT** contributor, has written for the *New York Times*, *Forbes*, and *Barron’s*.



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Passion Made Possible

Hiking through New Hampshire's magical mountains

The views are spectacular, and meals and lodging are available on the way up and down.

by Thomas R. Pero



When Courtney and James Wrigley put on their hiking boots this summer and start up the trail leading to their favorite hut in New Hampshire's White Mountains, their two-year-old and their zero-year-old will be tagging along. Courtney is pregnant. And James will have the satisfaction of guiding yet another generation of his family into the magic mountains that his father introduced him to in 1988, when James was three.

Wrigley isn't just any mountain lover. He is huts manager and search-and-rescue coordinator for the eight backcountry huts operated

by the venerable Appalachian Mountain Club (AMC), which two renowned professors from Harvard and the Massachusetts Institute of Technology founded in 1876.

"They're still a little rustic," says Wrigley of the huts, "but we do our best to make them comfortable." There are no showers, nor is there heat or electricity. But there are clean outhouses. And hikers needn't burden themselves with cumbersome packs. AMC staff and summer volunteers man the huts and pack in provisions daily. You'll find clean beds and sleeping bags with warm wool blankets waiting, although you may wish

to bring your own pillowcases. For dinner you might dine on traditional New England roast turkey, complete with fresh bread. In the morning you'll rise to oatmeal, bacon, and eggs.

The huts—three of which are above treeline—offer a range of experiences. They are connected by a network of well-maintained trails of varying steepness and difficulty. For first-timers, James Wrigley recommends an easy three-day hike of 2.8 miles up the Crawford Path to Mizpah Springs Hut, which is nestled between two peaks of 4,000 feet. That's where you spend the first night. Then the next day you hike five miles to



the Lake of the Clouds Hut, which is 5,012 feet above sea level. On the third day of your adventure, you hike the three miles down the tumbling, leafy headwaters of the Ammonoosuc River.

The trails are interspersed with spectacular views of Mount Washington, the tallest in the Northeast. Its granite dome soars 6,288 feet. Washington is famous for fierce, erratic weather. Snow covers the stunted firs and spruces—sometimes even in August. Last January wind-chill temperatures approached minus 100 degrees Fahrenheit.

The huts host visitors from all over the world from June through October. (For reservations,

call 603-466-2727.) This year more than 45,000 guests will stay overnight at these classic New England hiking huts, the most ever. That's encouraging to James.

"This is unique for the Northeast," he says. "There won't be any new places this beautiful and rugged found on the East Coast. We can all contribute to conservation by treading lightly."

BJT

Thomas R. Pero (tpero@bjtonline.com) is publisher of Wild River Press. His latest book is *Turkey Men*.

A Bit of History

Congress established the White Mountain National Forest in 1914. It started with 7,000 acres of remnant greenery bought with federal funds for \$13 an acre, surrounded by a logged-over, burned, and blackened landscape. During the last century these protected public recreational lands have expanded to 800,000 acres. The land has recovered. The trees have grown back. The mountains are green again. —T.R.P.

Making “impossible” vacations possible

Increasingly popular curated private jet tours come loaded with perks and pleasures.

by James Wynbrandt



You’ve probably seen advertisements for grand world tours sponsored by the likes of the *New York Times*, *National Geographic*, and Four Seasons Hotels and Resorts aboard luxury converted airliners, their itineraries packed with curated experiences and insider access to exotic destinations. If the trips sound enticing, but rubbing shoulders with 50 or so other travelers puts you off, you’ll be glad to know that the same aircraft, along with a variety of well-appointed business jets from these and other high-end tour organizers, are often available for private luxury guided tours. And demand for such tours is growing.

“People are increasingly starting to value experiences over things, meaning that they are putting a higher priority on travel and looking for unique experiences,” says Elisabeth Nelson, managing director for private travel at TCS World Travel, which offers tours aboard business jets in partnership with veteran U.S.-based luxury tour organizer Travcoa. The mass-media advertisements mentioned above could also be influencing the market.

“Now that Four Seasons and *National Geographic* are doing it, it’s made it seem a bit more accessible,” says Elisabeth Ellis, founder of luxury travel consultancy Blue Marble Private in the U.K. “Now it might not feel so extravagant to clients.”

It’s not simply the chance to travel onboard a luxury converted airliner or a business jet that draws customers to these tours. “Many of the guests on our private jet journeys have their own planes,” says Jean Fawcett, media relations manager for bespoke tour outfitter Abercrombie & Kent (A&K). But, she adds, “The logistics of trying to do it on their own can be overwhelming.”

A&K began the luxury jet tour trend, hosting its first such trip in 1989 aboard a retrofitted Lockheed L-1011 TriStar. Today the company (like the *New York Times*) uses an Icelandair Boeing 757-200ER for its world tours; the aircraft, with its 50 custom-designed Italian leather berthable seats, is also available for families and private groups.

If you don’t need a platform that large, A&K can source a jet that matches the size of your group (16 guests maximum) and itinerary for one of its Wings Over the World journeys. If you want to use your own jet, A&K and other tour organizers can handle all the other arrangements.

Having onboard gourmet meals instead of dining on traditional airplane food is surely part of the appeal of these jaunts. The Four Seasons’ 52-passenger B757-200ER carries an executive chef who uses fresh ingredients gathered at each stop for every in-flight meal, for example. But what most sets private luxury air tours apart are the customized itineraries and on-ground activities designed around

each client’s demands and desires. These purveyors have the contacts and clout to arrange unusual and otherwise unavailable activities, from private performances by world-acclaimed artists to off-hours access to Egypt’s Pyramids of Giza, so you can explore the wonders in solitude.

China’s Deer Jet recently offered a weeklong Cannes Film Festival tour on its Gulfstream G550 that included access to the red carpet for the opening-night gala, mingling with artists and celebrities, and invitations to the official after-party.

U.K.-based Air Charter Services (ACS) provides customized tours designed around events like the Monaco Grand Prix, European Fashion Week, and the Super Bowl, along with more traditional offerings like African safaris and themed regional tours. The shift toward this kind of travel is “palpable,” says Christian Lee-Fatt, ACS’s jet card sales manager for the Americas.

“The bigger they dream, the better,” says Ellis of those considering such journeys. “There’s generally a way of making possible things they don’t think are possible.”

Blue Marble Private recently introduced a selection of tours with “off-the-beaten-path experiences only possible when flying by private charter,” including a “top-to-tail”



exploration of South America and a Greenland-to-Iceland adventure. As the latter journey may suggest, these tours can sometimes be brief. Nelson at TWC notes their tour customers “tend to book shorter trips to fit around their work schedules,” to maximize the value of their leisure time. (TWC has also partnered with Four Seasons on private jet tours.)

If you prefer to mix your forms of transportation, note that the U.K.’s Air Partner has allied with yacht broker Camper and Nicholson’s to offer packages that include roundtrip jet charter travel to Fort Lauderdale, where passengers embark on a yacht for a one-week cruise.

The big names in the business are responding to the demand for these private, individually curated tours. Four Seasons last fall teamed with NetJets to offer vacation packages using the fractional provider’s fleet and Four Seasons properties. In introducing the tours, J. Allen

Smith, president and CEO of Four Seasons, noted that “many of our guests are already NetJets owners.” The offerings include a ski trip in the American West, a Hawaiian getaway, and a European jaunt that hits the Continent’s gastronomic hot spots.

Crystal Cruises made waves last year when it introduced Crystal Sky, a B777-200LR, the newest and largest of the dedicated VIP tour platforms, under the banner of its new Crystal AirCruises division. The 88-passenger jet is available for private charter—design your own itinerary or choose one of Crystal’s global journeys—but the company also offers, through its new Crystal Luxury Air branch, tours on “a curated fleet of sophisticated aircraft” led by its 12-passenger flagship, a Bombardier Global XRS.

These tours aren’t limited to journeys of self-fulfillment and indulgence. TCS World Travel/Travcoa, for example, can organize itineraries that involve charitable causes and volunteerism.



Crystal Luxury Air

“If you want to make a difference, or just learn more about how you can make a difference while traveling, we can help,” says Nelson.

Costs of these tours vary based on the aircraft, accommodations, on-ground activities, and itinerary. (Group world tours organized by

the *New York Times* and A&K start at about \$135,000 to \$150,000 per person, double occupancy.) If you’re considering a charter like this, look for a company with proven experience in the high end of the travel market, and deep knowledge and contacts in the locations you want to visit. **BJT**

James Wynbrandt (jwynbrandt@bjtonline.com), a multi-engine instrument-rated pilot and regular **BJT** contributor, has written for the *New York Times*, *Forbes*, and *Barron’s*.

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Spain's Navarra Pro

Navarra is little—and little-known—but it offers big pleasures. Here, an ex-resident returns to explore its history, food, culture, and wilderness.

by Mark Eveleigh



Province



The first time I came across them, I was stunned to see a uniformed band of three pipers and a drummer walking down a deserted street soon after sunrise. I encountered them as I went out one morning in search of an early coffee in Pamplona, the capital of Spain's northern Navarra Province.

Every Sunday, for longer than anyone can remember, the *txistularis* (as the pipers are known) have been heading out from the baroque town hall here to serenade in the old quarters. This is one of many timeless aspects of life in Pamplona—as reliable as the chiming of the cathedral bell or the soft swish of a street sweeper's broom. I lived here for over a decade and whenever I return to this lovely city to visit my daughter, Lucia, we go out on Sunday to watch the *txistularis*.

We also often walk along Calle Nueva. (Only in Pamplona could a road with six centuries of history be known as “New Street.”) Many of the balconies here drip with bunting in the form of the red, white, and green flag of the Basque country, and newly arrived visitors frequently jump to the erroneous conclusion that that's where they are. Even the red, yellow, and purple of the Republican flag (emblematic of the 1936–1939 civil war) are present yet, strangely, the red and the gold of the Spanish flag are absent.

Pamplona is one of the most peaceful places in Iberia these days, yet this city, just a stone's throw from the Basque highlands, still feels like frontier country in many ways. Perched on

its impregnable ledge—which is embossed in granite with the star-shaped battlements of one of Europe's most intact medieval citadels—it is easy to imagine the Casco Viejo (old town) in the medieval days when it was besieged by enemies.

Those days have long since passed and for 51 weeks of the year Pamplona could qualify as Spain's most invisible provincial capital. Then, annually on July 6, a modern-day army of more than a million devotees invades this city of 200,000 inhabitants for the Fiesta of San Fermin. Pamplona takes a few long pulls at a wineskin—eventually consuming an estimated total of almost 70,000 gallons of booze during the eight-day fiesta—and turns into the hell-raising capital of the world.

Pamplona during “peacetime” rarely features in tourist itineraries, however; and, apart from the foot-sore modern-day pilgrims who pass through on the famous Camino de Santiago, the province as a whole sees few visitors. It is as if Navarra has become a victim of the fame (many would say notoriety) that is connected with the running of the bulls. Ask the locals what they think of Hemingway's legacy and the real-life

The serenade in the old quarters is one of many timeless aspects of life in Pamplona—as reliable as the chiming of the cathedral bell or the soft swish of a street sweeper's broom.

ALL PHOTOS: MARK EVELEIGH, EXCEPT OPENING SPREAD: FOTOLIA





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From the rocky ledge on which I perch, I can imagine armies of mounted barbarians wielding razor-edged scythes.

Death in the Afternoon re-runs that draw crowds of almost 20,000 to the world's fourth-largest bullring and you risk inciting tempers: after all, Navarra has so much more to offer than just the world's greatest party.

An hour south of Pamplona, cut off from northern Navarra by the Aragón River, you find the great desert wilderness of Bardenas Reales Natural Park.

The entire province of Navarra is considerably smaller than Death Valley National Park,

yet this mountain kingdom at the foothills of the Pyrenees boasts its own spectacular version of California's famous desert canyons. I'm sitting astride a mountain-bike, gazing from the lip of a great limestone crest across a tangle of dry barrancos, crested with wind-sculpted sandstone. While this mysterious semi-desert is barely known even to Navarrans, it became familiar to millions worldwide as the Dothraki Sea when desert scenes were filmed here in 2015 for the sixth season of *Game of Thrones*.

From the rocky ledge on which I perch, like Don Quixote astride my aluminum Rocinante, I can imagine armies of mounted barbarians wielding razor-edged scythes. Instead of flame-coughing dragons, however, something potentially even more terrifying frequently crosses the sky over Bardenas Reales: part of this UNESCO Biosphere Reserve serves as an air-to-ground target range for bombing practice (without explosives). In 1970 the U.S. Air Force moved here after it lost access to its El Uotia gunnery range in Libya. Over the next 15 years, Bardenas Reales became the biggest European training ground for American pilots who must have thought it did indeed look a lot like the Libyan desert as they streaked across an area that had been the peaceful wintering grounds for migrant shepherds for thousands of years. Shepherds still use this area for wintering their flocks but usually avoid the soaring temperatures of the summer months here.

"This area remains truly wild, and few people—even locals—ever come here," says Stephanie Mutsaerts, as she stops her bicycle next to me. "You can often see golden eagles and Egyptian vultures riding the thermals up here."



Stephanie left her home in Vancouver 20 years ago and now knows northern Spain better than most locals. She first fell in love with Barcelona but soon discovered the excitement of Navarra. She quit her job as an English teacher at Navarra University to dedicate herself to regional tourism—focusing not only on VIP visits to San Fermin Fiesta but also on promoting the province to travelers who are looking for something even more unpredictable than the fiesta.

Our morning ride has fostered an appetite and by the time we've freewheeled down the rutted tracks back to Stephanie's car, the hot dust in my mouth is spawning desert mirages of that first lunchtime sip of Navarran wine. So, from the road back towards Pamplona, Stephanie takes a detour through the ancient town of Olite and onto a tiny country road that leads to the little village of Ujué.

"Ujué" means pigeon," says Juana María Rosauero, as she leads us to a table in Casa Urrutia, the restaurant that bears her husband's family name. "Legend has it that two



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shepherds, lost in a storm, saw a pigeon flying into a cave. They went inside to shelter and found the statue of the Virgin Mary that now stands in the Church of Santa María on the hill. The village of Ujué grew around the spot.”

It’s hard to imagine today that this sleepy hamlet with fewer than 100 inhabitants was in the 12th century a fortified community of about 1,500 people that boasted one of Europe’s first universities. Juana shows me into the kitchen where her husband José Manuel Urrutia is preparing a dish that would surely have been known (although perhaps in humbler style) to the two shepherds who inadvertently founded what was one of the great spiritual and strategic centers of northern Spain a thousand years ago.

“*Migas* is an ancient shepherd’s dish,” explains José Manuel, who started baking in his father’s shop when he was 14. Although it’s a secret family recipe, he agrees to give me the basics: “First, it must be made with the crumbs of very good bread...but the bread must be four or five days old. You fry the bread crumbs in lard with garlic, pork belly, serrano ham, mushrooms, and tomatoes.”

By the time I return to the dining room, the table is groaning over moist, delicious *migas*, *txistorra* sausages, succulent roasted peppers, and the best sourdough bread in the region. We sip full-bodied red wine that has traveled just 20 kilometers through the rolling hills from the Pagos de Araiz vineyard.

Driving homeward in a crystal-clear Spanish evening, we’re suddenly aware of what seems to be a swirling black tornado against the blushing skyline. It is a

murmuration (as these mass meetings of birdlife are called) of what looks like several million starlings. They move in an ever-changing shadow above the waters of Laguna de Pitillas, shifting and swirling in a haunting aerial ballet, until they finally come to rest on the ranked lines of grapevines in such numbers that the plants sag under their weight. The avian plague seems to provide a fittingly biblical end to our day in the Navarran desert.

“It doesn’t seem logical for such a small area as Navarra to boast both a desert and a jungle,” enthuses Stephanie as Lucia and I jump into her car in Pamplona one morning.

From the city it’s about an hour’s drive through villages with names that seem to clang like the bells on the Basque oxen: Oroz-betulu, Orbaizeta, Ochagavía, then the Selva de Irati (Irati Jungle). This pristine wilderness is the second-biggest beech and fir forest in Europe (after Germany’s Black Forest) and an area of incredible beauty that glows a fiery orange in the fall. Irati is an enchanted forest haunted by foxes, wild boar, deer, and even, according to legend, a local yeti.

In the ancient Basque religion, Basajaun was a benevolent giant who roamed the forests, warning shepherds of coming storms and guarding flocks from wolves. Some experts have hypothesized that the myth of Basajaun as the great teacher who showed the local communities how to construct mills and smelt metals could, in fact, have evolved from the supposedly advanced Neanderthals who



Traveler Fast Facts

WHAT IT IS:

If tiny Navarra (just 10,391 square kilometers) were an American state, this province in northern Spain would rank 48th in size and population, yet it is arguably Spain’s most fascinatingly diverse region. In 824 the Basque Iñigo Arista was elected king of Pamplona and the city remained Basque until it was annexed by Castile in the 16th century.

CLIMATE:

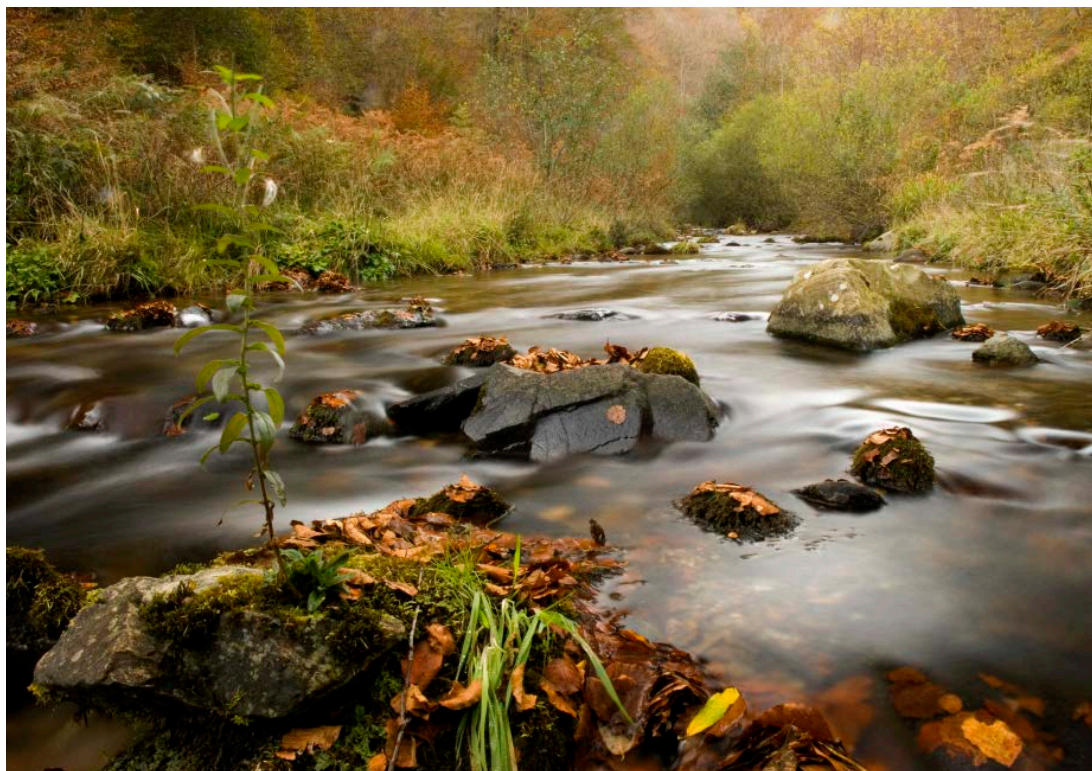
Summer temperatures climb to 30 degrees C (about 86 degrees Fahrenheit) but in winter the city occasionally sees snow. No months can be guaranteed to be rain-free but, even in the depths of winter, there are often sun-blessed days to lure you out for a *pintxo* (tapas) lunch on a terrace.

GETTING THERE:

Pamplona Airport accommodates private jets but airline connections are limited and most people travel to Navarra via Madrid or Barcelona (four and five hours away, respectively, by train). Bilbao Airport serves many European destinations and is just two hours by bus from Pamplona.

WHAT TO KNOW BEFORE YOU GO:

To really get under the skin of this part of Spain, you should take time not only to soak up the atmosphere of the old town but also to explore the rural villages and valleys.



Traveler Report Card

ACCOMMODATIONS:

La Perla (B+), Pamplona's most famous five-star hotel, is perfectly located on the beautiful Plaza del Castillo. The room where Hemingway stayed was left unchanged, even during extensive renovations. **Muga de Beloso** (B) is a chic modern four-star hotel overlooking the Arga River in a peaceful location at the edge of the old town. For those who want to live like the locals **Heart of Pamplona** (A+) offers a range of beautiful self-catering apartments in the city's historic center.

CUISINE:

Navarra is renowned by the Spanish for its hearty country food. The vegetables—especially asparagus and peppers—grown on the sun-blessed Pamplona basin rank among the world's finest, as does Navarran wine. One of the best ways to sample the endless variety of local produce is to dine on *pintxos* (as the local style of tapas is known). **La Cocina de Alex Múgica** (A+) is where the city's most famous chef works his magic. **Bar Gaucho** (B+), while less salubrious, has won countless awards as the best of the traditional *pintxo* bars that date back to Hemingway days. **Café Iruña** (B), overlooking the main plaza, offers a hearty three courses plus wine for US\$19. To sample country cuisine as you might never have had it, try **Casa Urrutia** in Ujué (A). Don't miss the specialty *migas* and pick up some of José Manuel Urrutia's freshly made confectionaries, such as iconic *rosquillas*, *magdalenas*, and *txantxigorris*.



FOTOLIA

Migas con chorizo

ACTIVITIES:

Options range from cultural trips and visits to highland villages to mountain-biking journeys in Bardenas Reales and trekking expeditions in the magical forest of Irati.



had one of their last bastions in this area. Circles of prehistoric stones still mark sacred spots on the peaks (such as the 123 monoliths at Azpegi); and in nearby Abauntz Cave, archaeologists have unearthed the remains of a Neanderthal settlement that dates back 50,000 years.

Traditions die hard in the highland villages of Navarra. If you drive north alongside the crystal-clear headwaters of the Bidasoa River (where Hemingway once terrorized the trout) and into another chain of valleys with names that ring like a wind-chime—Urritzokieta, Lurriztiederra—you come to the highland village of Etxalar and what might be the world's most unusual community of “fishermen.”

“The villagers here have been trawling with nets on the highest mountain passes for centuries,” local guide Alfonso Bermejo tells us as we gaze at the northern slopes of the Pyrenees sweeping down into France. “But rather than trawling for fish, these men are fishing for pigeons.”

Apparently the first-known recorded mention of *la palomera* (literally “the pigeoning”) was from

a 650-year-old letter in which the villagers of Etxalar complained to the church authorities about their local padre, who was holding mass at 4 a.m. so that he'd be free to go “pigeoning” at dawn.

Even at that date the tradition had already been around for more than a thousand years, and these days the giant pigeon nets are still hoisted between the highest trees on the peaks to catch wild pigeons that have fattened up for the long migration to North Africa.

“The season is a short one—only October and November,” Bermejo explains, “but during that time as many as 100,000 pigeons fly over these passes in a single day.”

When the pigeons get close, hunters on high wooden watchtowers throw whitewashed bats which, to panicked pigeons, look fleetingly like hawks. The pigeons evade them by diving low and fast towards the tree line...and straight into the nets.

Mark Eveleigh (meveleigh@bjtonline.com), who wrote about South Africa for our June/July 2016 issue, has contributed to more than 80 publications, including the *New York Times*, *National Geographic*, and *Esquire*. For this article, he traveled to Pamplona at his own expense but was hosted with an apartment there by Heart of Pamplona and experienced the Navarran wilderness courtesy of Northern Spain Travel.

It's hard to believe that yesterday we were dining on delicious shepherd's breadcrumbs in a village near the desert and today we're feasting on wild pigeon with chocolate sauce in a cozy wood-beamed *asadador* (roasting house) in a Pyrenean village less than 20 kilometers from the Irati Jungle. We take our time over a bottle of Basque cider and by the time we emerge the afternoon mist has started to descend among the red-tiled roofs of Etxalar. It is time for us to head back down to the sunny plains of Pamplona.

The next day is Sunday, so Lucia and I wake for our traditional rendezvous with the pipers. We step out onto our balcony at sunrise and gaze down the ancient canyon of Calle Nueva. This might be late fall in Navarra, but as we wander out into the early-morning crispness we're reassured by the knowledge that, even in the depths of a Spanish winter, the sun also rises.

EJT

TRAVELER CALENDAR



August 8–10

SANLUCAR HORSE RACES

Sanlucar de Barrameda, Cadiz, Spain. The horse races on the beach, which officially started in 1845, are free to attend; and the party in Sanlucar—with flamenco and vino—is not to be missed.

Info: andalucia.com

August 14–16

LABACE

São Paulo, Brazil. The Latin American Business Aviation Conference and Exhibition (LABACE) is celebrating its 16th year. Sponsored by ABAG (the Brazilian Association for General Aviation), the event attracts attendees from around the world who gather to do business in this growing market. **Info:** abag.org

August 17–September 9

U.S. OPEN TENNIS CHAMPIONSHIP

Flushing Meadows-Corona Park, New York. Join in on the 50th anniversary celebration and watch electrifying tournaments played by some of the sport's greatest players. **Info:** usopen.org

August 29–September 8

VENICE INTERNATIONAL FILM FESTIVAL

Venice, Italy. Highlights of the 75th annual festival include Best Restored Film and Best Documentary on Cinema. **Info:** labiennale.org

September 6

NBAA REGIONAL FORUM

San Jose, California. Held at the San Jose International Airport (SJC), this event incorporates exhibits, static displays of aircraft, and educational sessions with the goal of introducing bizav to local officials, prospective owners, and operators, and addressing current issues in the region. **Info:** nbaa.org



September 6–14

NEW YORK FASHION WEEK: THE SHOWS

New York. Celebrities and businesspeople garner exclusive access to the next season's hottest trends from A-list designers and their models. **Info:** nyfw.com

September 8–9

THE ELITE NEW YORK

Fairfield, New Jersey. Get a close-up look at a wide array of luxury products—from business jets to prestigious boats, supercars, fine art, and fashion.

BJT is a media sponsor of this event, which will take place at Essex County Airport.

Info: theeliteevents.com

September 8–9

LUXURY & SUPERCAR WEEKEND

Vancouver, Canada. This event will include fine dining, a fashion show, and a supercar auction.

Info: luxurysupercar.com

September 18–October 14

NEW YORK CITY BALLET

New York. The season will open with 30 productions by George Balanchine, including *Jewels* and *A Midsummer Night's Dream*. A Fall Fashion Gala will feature world premiere ballets on September 27.

Info: nycballet.com

October 4–7

FRIEZE LONDON

London. View and buy from the world's most exciting emerging and iconic artists. **Info:** frieze.com

October 31–November 1

FORT LAUDERDALE INTERNATIONAL YACHT SHOW

Fort Lauderdale, Florida. More than a thousand high-performance boats, sailing yachts, motor yachts, and superyachts will be on display at the 59th annual show in the "Yachting Capital of the World."

Info: flibs.com

November 4

NEW YORK CITY MARATHON

New York. Cheer on more than 50,000 runners, many of whom are raising money for charity via the event.

Info: tcsnycmarathon.org

For a long-range events calendar, please visit
bjtonline.com/calendar.

BUSINESS AVIATION'S BIGGEST EVENT

Orlando. The National Business Aviation Association's annual Convention & Exhibition, held this year from October 16 to 18, brings together aircraft manufacturers, airplane owners, equipment suppliers, and others with connections to the industry. This year's event—which is expected to attract more than 25,000 attendees—will feature over 1,100 exhibitors and 100 aircraft on static display. **Info:** nbaa.org

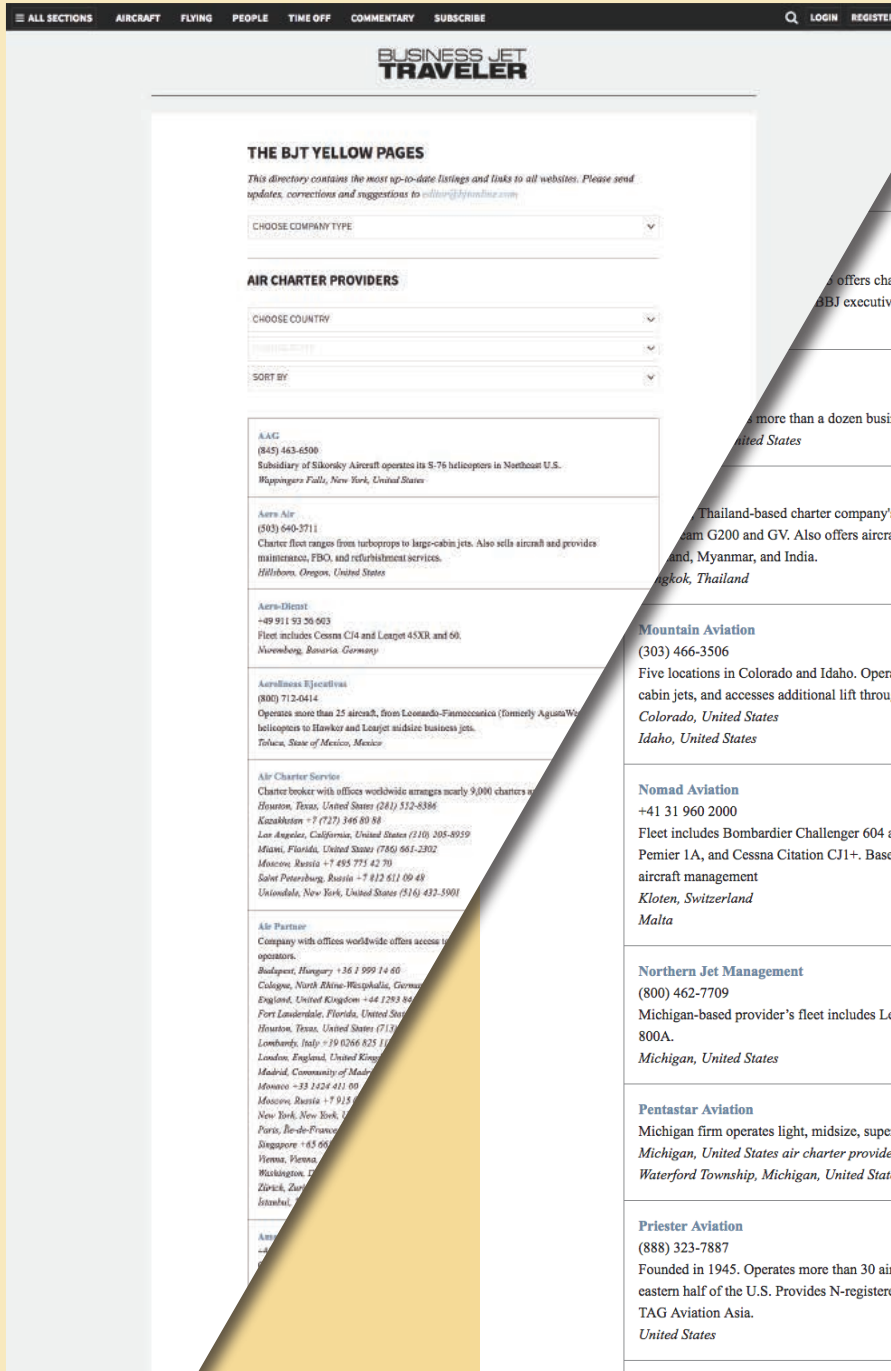
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DAVID McINTOSH

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Yesterday's view of today

Some predictions in a 1970s report on aviation's future have proven to be clairvoyant. Many others missed the mark completely.

by Mark Phelps

I was dragging six boxes of musty aviation magazines to the curb for recycling when nostalgia got the better of me. I grabbed a 1977-vintage Aircraft Directory off the pile for a last look.

One article summarized a NASA Outlook for Aeronautics report (“Aero Outlook” for short), compiled by “a great many experts in government, industry, universities, and other segments of the aeronautical research community.” It addressed prospects for civil and military aviation through the end of the millennium and beyond. I couldn't wait to have a look.

The experts couldn't prognosticate about air transportation without guessing at how humanity overall would handle the next few decades. So, even as the first great energy crisis was gathering steam, NASA took this stab at it: “Population expansion will be accompanied by increased per capita income and greater leisure time, as Japan and the nations of the West experience continued economic improvement.” I'm still waiting for that “greater leisure time” to kick in.

However, the report was clairvoyant in several areas. For example, “Serious questions arise as to whether a single commercial airframe manufacturer is financially able to undertake, alone, the development of the next new commercial aircraft.” NASA accurately predicted that such programs would require consortiums, including international ones, and that “new commercial aircraft ventures will

probably also require substantial government funding support to offset the risks...”

In Europe, the British/French Concorde program was the first major inter-governmental cooperative effort, and the Aero Outlook also cited the then-new Airbus consortium and its developmental A300 “subsonic long-haul transport.” In the U.S., consolidation took the form of major airline manufacturers slowly either selling out (McDonnell Douglas to Boeing in 1996) or refocusing on military programs, as Lockheed did when it abandoned its L-1011 in 1984, later merging with Martin Marietta to form Lockheed Martin. In 2018, it's hard to remember a world with more than two major players in the airline airframe business.

The Aero Outlook also guessed correctly that efficiency and cleanliness would become the mantra of aircraft development. “The quest for greater fuel efficiency and reduced operating costs of civil airliners will depend for the most part on technical advances in engines, lightweight composite materials, and improved aerodynamics.”

NASA's crystal ball clouded, however, when it came to projecting how airport infrastructure would develop. The Aero Outlook surmised that, by 1995, “With the advent of very quiet VTOL aircraft that can operate from small landing sites, perhaps 10 acres in area or four city blocks, the potential exists for using small city

airports as the nuclei for redevelopment and for creating centers of commerce that would revitalize our cities.”

In 2018, it's tough to imagine a politician trying to sell the idea of a 10-acre vertiport in the middle of a city as a nucleus for urban redevelopment.

The Aero Outlook also fogged up regarding supersonic flight. “The year 1995 is the target date for a second-generation, commercial supersonic transport.” It would be much larger than Concorde, NASA wrote, fly up to 8,000 statute miles, and “incorporate significant advances in technology that would permit clean and efficient flight at cruise speeds up to 2,000 mph and quiet operation in terminal areas.”

Aerion is targeting some of those capabilities in its AS2 supersonic business jet, but with the demise of the Concorde, supersonic airliners not only haven't progressed, they've literally become museum pieces. If there is to be a rebirth of supersonic airliners, perhaps business aviation is leading the way.

Conspicuous by its absence in NASA's report is any mention of avionics development. If you had shown one of today's instrument panels to any 1977 pilot (including me), they would have thought it was fanciful science fiction. **EJT**

Mark Phelps (mphelps@bjtonline.com) is the executive editor of AIN Publications, publisher of BJT.

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