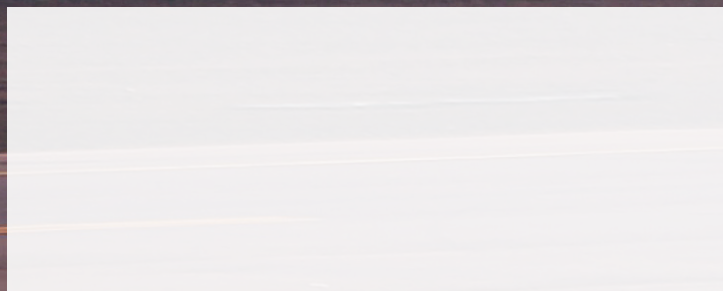


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INSIDETHEFENCE

Joe Petrie
Editor-in-Chief



Grace Under Fire

Great leaders and real solutions are forged in the fires of conflict.

One of my favorite times of year when I was a newspaper reporter was government budget season.

No, seriously. Stop laughing.

For weeks at a crack, I'd spend upwards of 10 hours a day in a cramped, drab gray government office, listening to an oversight committee rake over some poor administrators about what they wanted to spend next year. Not a single dime was left unturned, no matter how irrational the concern seemed.

A lot of airport managers reading this right now know what I'm talking about. Going hat-in-hand to a committee to get your budget approved for next year only to spend 30 minutes answering questions on why you plan to spend money on name brand Post-It notes for office staff is just a fact of life for you.

And if you're in the north, I bet you've been told at least once in your career to cut the thermostat by two degrees in the winter and inform employees to just invest in some thicker sweaters.

As an outsider it was entertaining. Talking to insiders, it was annoying. All the irrational questions and demands really took away valuable time spent on day-to-day operations.

But one thing I learned was it made a lot of them better at their job. Some have told me over the years about how it made them rethink how they do their duties and plan. Not in just a financial sense either. Conflict can be quite constructive and solve a lot of issues. Look at the security line situation in May. Conflict with the TSA wait times forced people to find solutions.

Most people don't want conflict, but it still happens. While you can't control conflict brought on, you can control how you handle it and how you adjust going forward.

When you look at the stories in *Airport Business* each issue, notice each of them has an issue that started with a conflict and sometimes encountered it along the way. What makes these stories valuable is they show what airports, consultants and leaders did to grow and what made them industry leaders.

Great leaders don't create conflict — they create real solutions to get through it. So next time you find yourself facing another big challenge, just smile to yourself and think creatively.

Otherwise you'll find yourself at the other end of the table making others better while some smarmy reporter silently chuckles at your gross intransigence.



The FAA@FAANews
There could be as many as 600,000 unmanned aircraft used commercially the 1st year after the small UAS rule is in place.
#drones #InterDrone

@JustinMeyerKC
SkyWest's Chip Childs says economics for 50 seat jets is still strong (for now). Needs demand to stay high and fuel to stay low.
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July **#passenger** demand shows resilience into the peak summer period.

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Trial By Ice

Salt Lake City Department of Airports overcomes challenges to successfully launch one of the nation's first comprehensive end-of-runway deicing programs.

Last December, during a storm that dumped 9 inches of snow on the airfield, Salt Lake City International Airport (SLC) launched a comprehensive end-of-runway deicing program, an initiative 10 years in the making. Under the program, all nine of the airlines serving SLC transitioned from airline-controlled deicing pads in the central terminal area to large common-use deicing pads near the ends of three major runways.

The Salt Lake City Department of Airports (SLCDA) operates SLC and had multiple reasons for decentralizing deice operations:

- **Greater airfield safety.** Constructing deicing pads at the end of runways would decrease congestion at aircraft exit/entrance ramps and gates.
- **Improved out-to-off times.** Having the deicing pads as close to runways as possible would reduce the need for secondary deicings and get planes on the runways faster.
- **Room to expand.** SLC is planning a new terminal complex and needed the space occupied by the current deicing pads for the new concourse.
- **Increased sustainability.** New deicing pads would allow for more efficient collection of glycol runoff to meet current and anti-

pated environmental regulations.

- **Traffic growth and changes in fleets.**

Pads would support growth in carrier and cargo operations and planes of various sizes, including 747-sized aircraft.

PROGRAM IS AMBITIOUS AND ROBUST

This past winter, three of the pads opened: 34L, 34R and L. A fourth deicing pad, 16L, is scheduled to open on time and as planned this fall.

At full buildout, SLC's end-of-runway deicing program will feature six pads (three on the north end of each runway and three on the south ends), supporting taxiways, roadways and utility infrastructure. The new pads and taxiways include independently controllable centerline lighting for marshaling aircraft into each deice position and a sophisticated glycol/stormwater runoff collection system.

The program also includes up to four deice support buildings, each with a deice control center, glycol storage, mixing and dispensing equipment, deice vehicle parking, office space and break facilities for deicing crews.

SLC is among the first U.S. airports to develop and successfully implement a comprehensive deicing program. However, as expected, implementation of the ambitious program was not without its challenges.

WEATHER PATTERNS CHANGE

In 2008, the SLCDA hired HNTB Corp. as primary engineering consultant for all aspects of the end-of-runway deicing program. HNTB collaborated with airport engineering and operations, FAA air traffic control and Delta Air Lines to set design criteria for each pad's size, the number and size of aircraft it would support and its location on the airfield.

HNTB issued 13 technical memos summarizing evaluated concepts, discussions, decisions and recommendations for major project elements. As part of the evaluations, HNTB completed shadow and line-of-sight studies from the existing air traffic control tower to confirm satisfactory viewing of the new runway-end facilities and to confirm the aircraft being deiced at the end-of-runway facilities would not interfere with protected airspace and services.

Based on the data collected, HNTB produced computer simulations of various airfield operational scenarios and runway departure



flows to optimize the location, size and layout of each deicing pad.

The SLCDA began the 2015-16 deice season confidently — with a set of expectations based on nearly a decade's worth of research, simulations, data mining, design, construction and information from other airports, but some aspects of the plan, such as the weather, would remain unpredictable.

The new pads were modeled for both north-flow and south-flow runway operations. Since north flow is by far the predominate operational condition for winter operations at SLC, the first three pads were constructed on the south ends of the runways to support north flow operations. But during the first year of pad operations, most of the storms came from the south instead of the north. The unusual shift in weather pattern presented problems, as the airfield did not yet have deice pads at the north end of any runway.

It was anticipated that the L pad, the first pad constructed, would see the heaviest use, but because SLC operated in an unusual south flow, the L pad was the least desirable that first winter.

The lesson is that it's important to periodically review assumptions to ensure they still are valid and to understand there may be some situations that simply cannot be predicted.

THE BASIC PREMISE OF THE SINGLE-PROVIDER PROGRAM CHANGES

While the pads and deice control facilities are designed to accommodate multiple deice providers, the modeling and simulation confirmed that a single-provider, common-use program

would create the most efficient, safest deicing environment. Based on that, the SLCDA asked all air carriers to participate in the program. For some, it was a hard sell.

"With anything new, you have to adjust and adapt," said Jon Beplay, Salt Lake City station manager for Southwest Airlines. "Having a third-party provider deice our planes meant we would lose some control over out-to-off times."

Delta, SLC's largest carrier, opted to continue its own in-house deicing program. The remaining air carriers, including Southwest Airlines, were required to contract with Integrated Deicing Services. The SLCDA still believed both deice providers could share common-use pads. However, because of congested taxiways, the 34R pad was IDS' primary pad until approximately 8:30 a.m., at which time IDS would operate almost exclusively on the L pad. Delta's crews would then take exclusive use of 34R and most of 34L, in preparation for their morning departure bank.

While the goal of common-use pads with a single deice provider has not been fully realized, the program has been a success because of compromise. All stakeholders found ways to make the program work through a blend of common-use and airline-controlled facilities.

MID-SEASON AUDIT REVEALS SLIGHTLY LONGER OUT-TO-OFF TIMES

In addition to regular meetings, the SLCDA held a program audit halfway through the first deice season. The meeting gave stakeholders an opportunity to express their concerns, talk about their experiences and be heard.



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Several airlines reported improved block and arrival-at-the-other-end times. The discouraging news was out-to-off times (the time from pushback to departure) were longer by an average of one minute compared with the last three deicing seasons. The overall average out-to-off time was 37.1 minutes, with Delta reporting an average 38.2 minutes and IDS clocking in at 35.3 minutes.

The root cause of the increase was the congested taxiway leading to Delta's deicing pad, which blocked other aircraft from accessing other deicing pads. Under the new system, planes queued up at the deice pad. Before, the airlines would hold planes at the gate until a deice pad was available.

"Push-to-off times weren't prohibitively longer, but they were longer than before the new deice pads," Beply said. "As time went on, we saw improvement. This year, Delta Air Lines will hold planes short of the deice pad, so the taxiway is not blocked. Based on this new solution for managing congestion, we are optimistic efficiency will continue to increase going into the new season."

Last winter being the first year of the new deicing program, it wasn't known if the longer out-to-off times were typical for end-of-runway pads. Having no previous-year data from which to make comparisons, all stakeholders agreed to reframe that first winter as a benchmarking season and began collecting the appropriate data. This winter, the SLCDA will be able to compare year-to-year statistics.

FIRST SEASON CONFIRMS A BROAD DEFINITION OF SUCCESS

By January 2016, just one month after official launch, the end-of-runway program was running very well and the SLCDA was able to place several marks in the win column:

- The airport's deice operations had been consolidated.

- The previous deicing pads were decommissioned, clearing the way for expansion.
- Secondary deicings were eliminated.
- Congestion was improved.
- Greater sustainability was achieved with a sophisticated glycol collection system.
- Actual time on the deicing pads was as predicted. Once aircraft were on the pads, the deicing process was smooth and efficient. Aircraft were moved expeditiously to their assigned departure runways after deice.
- What's more, both providers were committed to the program's success. Delta and IDS agreed to manage the deicing pads, freeing SLCDA operations managers for other tasks.

Going into the second season, the SLCDA and all stakeholders have the advantage of experience. However, the landscape of the deicing program will continue to evolve with the opening of the fourth deice pad. The new fourth pad will present an opportunity for improved deice operations and a challenge as everyone learns how to incorporate it into operations.

The SLCDA accomplished what it set out to do after many years of planning, negotiations, design, construction and coordination. It has set the stage for safe, efficient deice operations, future growth and environmental responsibility at Salt Lake City International Airport.

ABOUT THE AUTHORS

Al Stuart & Rob Millar

Al Stuart, AAE, is superintendent of airport operations for Salt Lake City Department of Airports. Rob Millar, P.E., serves as project manager for HNTB Corporation, a national infrastructure solutions firm. Special thanks to Doug Harris, airport operations manager, and Treber Andersen, airport operations superintendent at Salt Lake City Department of Airports for their contributions.

Enhance Traveler Experience with Digital Signage

Digital signage provides a unique opportunity to enhance the customer experience and operations.

Gone are the days of paper signs and delays in getting updated information out to travelers. We live in a real-time world and travelers expect real-time, relevant information at their fingertips. Visual communications using devices like digital signs and interactive kiosks can enhance the travel experience by helping people get to where they need to go safely, efficiently and effectively.

Arming your travelers with the right information, at the right time can ensure a positive experience in an environment that demands real-time sensitive information.

By implementing a digital signage platform, airports have the ability to:

- Keep passengers safe; emergency notifications can interrupt regularly scheduled content
- Improve operations by reducing the workload of employees

- Deliver real-time location-based information, such as arrival/departure times, cancellations and delays, or service stoppage
- Reduce environment footprint
- Be a “travel guide” through interactive way-finding kiosks

As advancing technology continues to enhance the many operational aspects of airports, implementing a digital signage platform still remains an important investment.

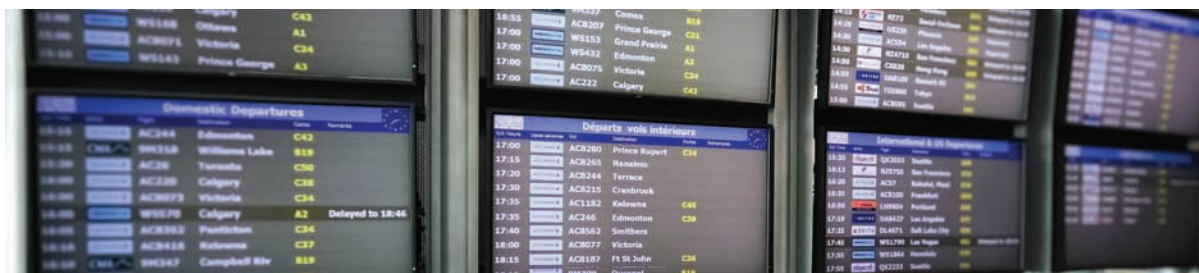
IMPROVED TRAVELER EXPERIENCE AT PORT COLUMBUS INTERNATIONAL AIRPORT

Centrally located in Ohio with a diverse mix of air carriers, John Glenn International Airport is the airport of choice for millions of passengers each year. The airport is operated by the Columbus Regional Airport Authority, which also oversees the operation of cargo-dedicated Rickenbacker International Airport and general aviation airport Bolton Field. John Glenn International Airport offers about 150 daily departures to 32 destinations and serves over 6 million passengers each year.

The airport launched an \$80 million renovation in 2013. As part of that project the airport wanted to expand its digital signage network to improve passenger communications and experience. Included in the project was the addition of more video walls and signage over the ticket counters to provide airlines the flexibility to direct customers to particular counters for check in priority and baggage management.

While hardware was important, the airport recognized software was critical and it wanted a single platform to manage its visual communications throughout the airport. Its installation is comprised of 44 x 14 foot LED video walls

Digital signage options set strategically in airports can keep passengers informed about flight information and allow for quicker transmission of information. Omnivex





Port Columbus has an installation comprised of 44 x 14 foot LED video walls over the entries to Terminals A and C and 62 ticket counter screens in the renovated airport. Omnivex

over the entries to Terminals A and C and 62 ticket counter screens in the renovated airport. The two video walls are comprised of single, high-resolution direct view LED screens and provide an outstanding graphics capability way beyond what the airport had previously deployed. Digital signage software allows the displays to be driven pixel-to-pixel, ensuring crisp text and images.

Each video wall features a mixture of real-time flight information as well as advertisements and other important community messaging and important information for travelers. The 62 ticket counter screens were designed to make updating the information easy with a simple touchscreen, graphical interface. Advertising revenues have also increased by over 50 percent with the new video walls and the outstanding quality of visuals they are able to present. Future plans include integrating information on checkpoint wait-times and social media content from the airport's social channels with the other content on the screens.

INTERACTIVE WAYFINDING KIOSKS: THE NEW WAY TO GET FROM POINT A TO B

Some airports still hire people to stand in strategic locations to direct foot traffic, which can be a very expensive solution. Airport kiosks

can include information on popular destinations, restaurants, shops and hotels, as well as timely information on local events and possibly the opportunity to buy attraction tickets. By allowing kiosks to be interactive, hungry travelers can use a digital wayfinding system to locate their gate, but also to see what food offerings are in that particular area. Since digital signage networks can be updated quickly in real-time, signs can dynamically change to direct travelers to their flights by the name of their destination, not just point to their intended gate. Automatic RSS feeds can keep the boards updated with features such as weather reports or breaking news.

By integrating interactive wayfinding in your airport, you also have the ability to handle key requirements such as:

1. Multifloor/Multiregion — Some locations may reside across multiple floors or multiple regions, such as another building or terminal. Transfer points, such as stairs, elevators and escalators (or trams, bridges and tunnels), need to be identified but may not be applicable to all viewers.

2. Conditional formatting — Some elevators may not operate at certain times of the day or escalators may change direction depending on the traffic requirements. The system should be able to decide the appropriate route based on current conditions and time of day.

3. Customizing for the viewer — For the physically impaired, wayfinding can be a challenge since certain routes may not be accessible depending upon the disability. For this audience the height of touchpoints on a screen must dynamically adjust to suit the reach of the viewer. On a large terminal map, it may be necessary to have both macro and micro views depending on the distance to the destination.

4. Auxiliary information — There is often information related to a wayfinding inquiry that can also assist the viewer. It could be a store description, details such as hours of operation or advertising about current promotions. Turn-by-turn directions may be provided by printing a map, or texting directions to a mobile device in the form of an SMS message.

5. Updates — Things change over time and one of the big advantages of digital displays is the speed at which updates can occur and the ease of distributing updates. The challenge



A wayfinding kiosk inside San Francisco International Airport. Omnivex

for short-term changes such as an escalator closed for maintenance must also be accommodated. Be aware that many wayfinding solutions require coding to make changes, which are expensive and often laborious, and are not reflected on the screens in real time.

6. Emergency procedures - Emergency evacuation procedures should be built into an interactive wayfinding solution indicating the closest exit and automated triggers. In addition, the system should be able to direct traffic away from trouble, not towards it, so if a fire alarm is triggered near an exit, traffic should be directed to an alternate exit automatically.

Digital signage is a great way to modernize and enhance the airport environment and the traveler experience, while at the same time creating revenue opportunities in concert with on-site retailers while delivering relevant real-time location-based information.



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Doug Bannister is CEO and CTO Doug for Omnivex and is responsible for the long-term product architecture and the overall vision for Omnivex. He has always maintained direct responsibility for the architecture of the software to ensure the product remains at the forefront of the industry.

Omnivex is a member of the Digital Signage Federation, the only independent, not-for-profit trade organization serving the digital signage industry. The DSF supports and promotes the common business interests of worldwide digital signage, interactive technologies and digital out-of-home network industries. To learn more, go to www.digitalsignagefederation.org



A Taste for Travel

Inside the HMSHost test kitchen, chefs are looking beyond traditional airport fare to create a new culinary experience.

Gone are the days when airport food meant snack bars selling hot dogs on rollers or a bland meal in a generic restaurant. The HMSHost Test Kitchen in Bethesda, Md., is a beehive of activity, perfecting the food and beverages passengers will eat this starting in the fall.

bring a team, so I brought on other corporate chefs from Todd English, Chef Bobby Flay and others.”

Steelman’s immediate team includes: James Klewin, the executive chef based at Chicago O’Hare; Richard Leadbetter, corporate chef, culinary standards; and Susumu Shibata, known as Chef Go, the corporate sushi chef. The overall team is comprised of 13 chefs.

“We’ve been challenged to change the industry one restaurant at a time. There’s no cuisine that we can’t do,” said Steelman. “I don’t know how many companies that have the bandwidth and depth that we have. This is a small kitchen. If we can do it here, we can do it anywhere.”

Carson Gray is the director of adult beverage and restaurant development for HMSHost, where he’s charged with creating cocktails and mocktails for the company’s restaurant and bar concepts. He came to HMSHost from the France Family of NASCAR, where he served as director of beverage & front of the house operations for its signature fine dining restaurant in Winter Park, Fla., Luma on Park. He is a certified sommelier, BarSmarts certified and a graduate of the Culinary Institute of America in Hyde Park, N.Y. He oversees a team that includes four mixologists, six sommeliers and two cicerones.

The Book & Bourbon, a concept coming to Louisville International Airport, fits the demographic and the region, said Gray. “It will focus on southern cuisine and most importantly, bourbon. We’ve worked with our spirit partners to get the best of the special bourbons in the region,” he said. “Our bourbon cocktails will be full-flavored and strong. They will pack

The kitchen is led by Chef Jeff Steelman, vice president of food & beverage operations. He came to HMSHost from Boston-based Todd English Enterprises, where he was vice president of culinary. He also did stints at the Hilton Casino in Atlantic City, N.J., and the Mohegan Sun Resort & Casino in Uncasville, Conn. His driving motivation is to deliver the best food to a travel population that has become much more discerning about what they want to eat.

“When I was a corporate chef for Todd English, I consulted with HMSHost on restaurant designs. I was then asked to come on full time,” said Steelman. “They told me to do what I do and



Sean Matthews, HMSHost



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CONCESSIONS



Sean Matthews, HMSHost

a punch, but that's to be expected."

UmaiZushi is a spin-off of the popular Wicker Park Sushi at Chicago O'Hare. Branches are already open in Houston's George Bush Intercontinental, Hartsfield-Jackson and Honolulu International airports, and a Fort Lauderdale outpost will open next summer. "It features a strong sake program, along with signature cocktails. It's less beer and wine focused," said Gray.

At the time of *Airport Business* magazine's visit, the test kitchen was working on food and beverage menus for the concepts for Book & Bourbon and UmaiZushi. We were invited to taste some of the items that will appear on the menu.

Other selections included fluke, tuna belly with asparagus, a sushi sampler plate with tuna, Otoro tuna, kampachi and shrimp, and a plate of octopus and red snapper, all served with genuine wasabi and washed down with a lychee mojito.

The first tasting, from Book & Bourbon, was a fried green tomato benedict featuring poached hen eggs, country ham, béarnaise and griddle hash. It was served with a Peach Beam cocktail, peaches and fresh basil muddled in apple juice, shaken with Jim Beam bourbon and strained. The chef also presented a quartet of deviled eggs

with flavors including applewood smoked bacon and dijon with toasted pecans.

The next item served was a root vegetable salad with honey-chili carrots, minted turnips, dry-roasted beets, field greens, extra-virgin olive oil and cracked peppercorns. The other salad was kale, with grilled shrimp, grit croutons, aged white cheddar cheese and apple cider vinaigrette. They were accompanied by a cocktail, the Jekyl and Ryed, made with Knob Creek rye, carpano antica formula, a Campari ice cube and orange bitters, garnished with an orange peel.

The menu switched over to sushi prepared by Chef Go, who has been with HMSHost since 2009 and oversees the company's sushi concepts out of Chicago O'Hare. He delivered a tuna tartare with his version of guacamole on top, served with a fried Vietnamese summer roll skin and Junmaiginjo sake. Other selections included fluke, tuna belly with asparagus, a sushi sampler plate with tuna, Otoro tuna, kampachi and shrimp, and a plate of octopus and red snapper, all served with genuine wasabi and washed down with a lychee mojito.

The food switched back to Book & Bourbon, where the chef served sweet potatoes brava, which were baked and flash fried, tossed with caramelized local honey, jalapenos, whipped avocado and feta cheese. He also served crispy frog legs with a spicy charred pineapple sauce, along with short rib hush puppies.

The sushi menu returned with a beautifully presented Japanese mackerel served sashimi and nigiri style, along with the UmaiZushi Tidal Wave roll, made with shrimp tempura, cream cheese, king crab, unagi sauce, honey wasabi mayo and tempura flakes. Chef Jeff presented fresh oysters

from Seattle with a black pepper mignonette.

Gray served a cucumber gimlet, composed with Hendricks gin, St. Germain, cucumber water, cane sugar syrup and lime with a thinly sliced cucumber as a garnish. Dessert was a house-made waffle drizzled with a bourbon caramel sauce, white chocolate wafer and a red velvet raspberry crunch.

Jim Schmitz is HMSHost's vice president of innovation, where he is responsible for exploring and implementing new and innovative solutions across the business, as well as sustainability. Before joining HMSHost, he was vice president, merchandising, planning and distribution for Starboard Cruise Services, a Moët Hennessy Louis Vuitton Portfolio Co.

"We needed chefs to drive food and beverage for HMSHost. Chef Jeff has a phenomenal background," said Schmitz. "He's done a great job getting his team together, and they've gone out and done some great things."

In the past two years, HMSHost has taken on big initiatives to advocate for consumer experience in an airport environment, said Shayna Iglesias, the company's director of digital marketing. "For example, in celebration of bringing the James Beard awards to Chicago, we did a 30-minute live cooking contest at O'Hare in our own kitchen stadium," she said. "Chefs were required to use ingredients from the airport garden. The winner had their item put on the menu at a restaurant at O'Hare. They also got a VIP experience for the James Beard awards gala."

HMSHost will again be holding airport restaurant month in October, said Iglesias. "It includes seasonal menus and will be plated on one plate for speed of service," she said.



DIGITAL SIGNAGE & BEYOND

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AIRLINE CUTBACKS SMALLER AIRPORTS

In the aftermath of the crash of Colgan Air Flight 3407 on Feb. 12, 2009, Congress pushed through more stringent training requirements for pilots. That, combined with a slew of retirements by major airline pilots and carriers cutting back on capacity, has led to spotty and canceled air service to smaller cities across the United States.

Michael Isaacs, manager of South Dakota's Pierre Regional Airport, said the pilot shortage is a big story in his city. "Ten years ago, we were served by Mesaba Airlines as Northwest [Airlink] with two flights to Minneapolis, and Great Lakes Airlines, which flew three flights to Denver," he said.

After the Delta Air Lines-Northwest merger,

Delta decided it didn't want turboprops in its fleet, said Isaacs. "We were one of 24 cities that Delta pulled out of. That was not part of the pilot shortage. It was just them restructuring their business model," he said. "However, we were successful in forcing Delta to stay on the route until Great Lakes took over."

In 2013, Pierre had eight flights a day: four to

Minneapolis and four to Denver. "But then the training rule change came out. The effects of it started during our hunting season in October, where our enplanements are doubled," he said. "So this pilot shortage hit us right at our peak season and it was very difficult."

There were a lot of missed bags and people missed several days of hunting, Isaacs recalled. "We also went from eight flights a day down to six flights a day. Then we went down to four and then three," he said. "But with high flight cancellations in the last couple of years, we averaged around 25 percent in cancellations, while our on-time performance rates were hovering in the 50 to 60 percent range, which led to us losing 75 percent of our traffic."

It was devastating, said Isaacs. "But with the help of Senators John Thune (R) and Mike Rounds (R) and our governor, we were successful

BACKS HIT HARD

Airports are exploring new options to fight back against air service cuts brought on by the pilot shortage.

By Benét Wilson

in bringing back money for [the] Essential Air Service [program]," he said. We were always an EAS community. However we hadn't collected EAS funds since 2006."

So the airport chose an upstart carrier, Kennesaw, Ga.-based Aerodynamics Inc. (ADI) in 2014 to take over its EAS flights after troubles with Great Lakes, said Isaacs. "ADI did have some initial startup problems, so they reorganized the company and rebid to provide scheduled air service in Pierre again," he said. The city again chose ADI as its EAS provider and it started service as Great Lakes Express JetExpress with a 50-seat Embraer ERJ-145 regional jet on Aug. 15. Issacs said as of Sept. 22, it has a 100 percent completion factor, with an 85 percent on-time performance and 59 percent load factor, which is well above initial expectations.

The airport hired an air service consulting firm, Mead & Hunt, to help, said Isaacs. "They were successful in getting us face time with some other regionals."

But it's been a challenge for Isaacs to encourage his community to use the new ADI service. "We've heard so many stories of people who missed weddings and funerals. There were just so many heartbreaking stories with the poor performance of the existing flights that we really had to take a gut check," he said.

Instead of doing last-minute cancellations, Great Lakes pulled back its forecast of when pilots were able to fly, said Isaacs. "It actually produced less frequencies with higher performance, which improved its last-minute cancellation ratio," he said. "They would cancel flights three weeks or more out so folks would not have to come to the terminal building to find out they

were cancelled."

Greg Kelly is chairman of Airports Council International-North America's (ACI-NA) Small Airports Committee and executive director of Georgia's Savannah Airport Commission. His committee is in the middle of an effort to help address challenges to small community air service.

"Right now, we're establishing a priority list of goals and objectives to address issues including the pilot shortage, restrictions on new entrant airlines, air service access in the event of further airline consolidations and the future of interlining," said Kelly. "We're looking to develop strategies legislatively, administratively and internally."

The plan is to roll out the committee's recommendations at the annual Airports Council International meeting in September in Montreal, said Kelly. "We want to not only have it for our members, but we also will try and have ACI to adopt our plan as well," he added.

Jonathan Ornstein is the chairman and CEO of Phoenix-based Mesa Air Group, which flies as American Eagle and United Express. At one time, Mesa had one of the largest 19-seat Beech 1900D fleets in the world, using its Air Midwest subsidiary to provide EAS service and flights to small communities. Doubling in size in the past three years and growing its fleet to 133 large regional jets by September, Mesa is one of the regional carriers continuing to attract pilots. However, the airline has been outspoken about the damaging effects to the industry since the FAA training rule change in 2013.

"Basically, the new rules took many of the most qualified candidates out of the market. These were kids coming out of terrific colleges with four-year degrees and 300 to 400 hours, who are probably among the best qualified to fly new-generation equipment," said Ornstein. "So now you have this gap where those who would normally be coming into commercial aviation have to forget all their good training and fly around banners or flight instruct to build time."

This is politically motivated, said Ornstein. "And it's a shame, because at the time when we're desperately trying to find high-quality jobs for people exiting college, we have cut that option off in aviation. It's just horrible," he stated. "There are literally hundreds of foreign flights flying into the most congested airspace on the East Coast and the West Coast. A guy who trains in Arizona for Lufthansa can fly a wide

body jet into JFK [Airport] with only 500 hours. It makes no sense. The current flight training rule is a continuation of the misguided policies that eliminated Part 135 operations for up to 30 seats, said Ornstein. That rule, passed in 1995, said that Part 135 operators were only allowed to operate aircraft with fewer than 10 seats. It was an attempt to boost safety on regional airlines in the wake of the American Eagle Roselawn, Ind., crash in October 1994. "Back then, Mesa quit the Regional Airline Association because we believed the rule would wipe out the Part 135 business. It dealt a devastating blow and thousands of jobs were lost as a result," he said.

There were more than 1,500 airplanes in passenger service under Part 135, said Ornstein. "Think about all those aircraft and all those smaller cities that were served. Look at New Mexico. Mesa had 13 flights a day from Albuquerque to Farmington. We had nine flights a day between Albuquerque and Roswell. I don't think there's service anymore," he said.

Pierre Airport's Isaacs agreed. "Now there are even less student pilots, down substantially from 10 or 20 years ago. There's less people



wanting to become pilots," he said. "The cost to become a pilot now, with the increased training requirement, is almost at the level that you need to become a doctor or an attorney."

Jim Sullivan is the chief of operations for Santa Monica, Calif.-based Surf Air, a private air travel club that offers members unlimited monthly flights using a fleet of eight-seat Pilatus PC-12 single-engine turboprops. It flies to a mix of commercial and business aviation airports from the Bay Area and the Los Angeles metro area, along with Santa Barbara, Truckee/Lake Tahoe, Nevada, Napa, Monterey, Sacramento, Palm Springs and Las Vegas.

Surf Air was formed by three young visionaries nearly four years ago, said Sullivan. "The founding CEO was previously the lead man for the Vice President of the United States and he traveled quite a bit on short notice using one-way tickets," he said. "He was always selected to go through the secondary screening process and his travel was such a hassle because of it."

He could literally walk up to the vice president and give him a hug, yet when he travelled to the airport, he was treated like a criminal, said Sullivan. "So he put together a think tank to look at how to make travel more convenient," he said. "They stumbled across this idea of creating a private airline using the private aviation facilities of an airport and make it as affordable as they could."

Three years later, Surf Air is approaching 3,000 members and 12 aircraft, with nearly 100 flights a day, said Sullivan. So many of Surf Air's routes are the old legacy airlines trunk routes, said Sullivan. "The basin to the Bay is one of the biggest markets in the country. There are quite a few of our markets where we compete directly with the legacy carriers," he said. "However, we also fill a void that may have been left by the regional airlines, like Carlsbad to LAX.

We're taking what was a commercial route and serving it, at least on one side, by private aviation at a private airport."

But Surf Air has also created new routes that no longer exist, like San Carlos to Truckee, said Sullivan. "There probably was a service from San

Francisco to Truckee at some time in the past, with PSA or Wings West," he said. "We look for these unique markets where we can take our private aviation terminal and connect it with an airport where there may not be existing commercial traffic."

While Surf Air doesn't fall under the FAA's 1500-hour training requirement, it still faces hiring challenges, said Sullivan. "We have no problem on the supply side, because we have a vast pool of interested pilots. But we do have a challenge retaining them," he noted.

The company is looking at different options. "We're going to look at clearly defining for pilots their Surf Air benefits and career advancement.



We may hire a pilot right out of college who starts with us and then through relationships with other airlines, we could provide an exit point for that pilot once they meet the training or experience requirements for those interested in that path," he said. "We also have a lot of second career-type folks that work for us who are not leaving. They are attracted by the fact that they are home at night. So that's an advantage for folks who have other responsibilities and family commitments."

Surf Air hopes to announce partnerships with different aviation companies on pilot career advancement, said Sullivan. "We acknowledge where we fit in this world. We may be a transitional airline for a lot of folks, but if we can get predictability, that will help us."

Mead & Hunt works with around 50 small and non-hub airports on air service issues. Jeffrey Hartz, a senior air service consultant for the firm, says these markets have been impacted the most by the FAA's revised pilots training rules and that some predictability would be welcomed.

The pilot shortage has been a game changer for lots of smaller markets, said Hartz. "But if you go back up to 20 years, the loss of turboprop aircraft has had a broader impact. We saw a lot of communities drop to flights to a single hub or even no service altogether," he said. "Look at Carlsbad, [California's] service to LAX on United Express. They lost that because there is no longer enough [30-seat] Brasilia [turboprop] service."

The pilot shortage has been incredibly difficult for Mead and Hunt's clients, but it's a paradox, said Hartz. "If you look at the airline industry, it's as good as or even a better business climate for them. Aircraft are cheap to acquire and fuel is stable, at low prices," he said. "So it's frustrating to see this pilot shortage, making it almost impossible for regionals, which continue to shrink in small and non-hub cities."

Some regionals are able to fill new-hire classes, said Hartz. "But the mainline carriers are also hiring, so there's a strong pull from the



top to hire pilots from regionals like Mesa and SkyWest," he said.

Mesa has a growth plan, so it is attracting pilots, said Ornstein. "The fact is that we can offer people a real career and continue to show them a career path." Unlike a lot of regional airlines that pay signing bonuses to people for coming to the company, we took a different path," he said. "We give bonuses to employees who recruit people to come to Mesa. Our people are our best recruiters, and we have paid out almost a million and a half dollars in bonuses to them. As a

result, we have the biggest recruitment staff of any regional airline."

Mesa is looking to create a cadet program with flight schools like the one it recently launched with Sierra Academy, said Ornstein. "We're trying to help [new pilots] bridge that gap to get from the 250 to 400 hours they have, up to whatever they need," he said. "We're thinking about buying a [Part] 135 operation, like a farm team. It's important to give people a career path all the way through."

Surf Air has a great opportunity, said Sullivan. "We've proven that our model works in California, and we're looking to roll it out across the country in different geographic areas. It works anywhere between two population bases with an appropriate stage length and an airport on either side," he said. "We've been very public in saying we'd love to be in Texas and Florida. There also looks to be a great market in the Northeast and the upper Midwest."

The company operates 12 Pilatus PC-12s.

The airline industry is moving toward larger planes that are flying less frequently, said Isaacs. "That's the overwhelming message that I hear from the airlines when we go to industry conferences. So if that's the case then we really need to hone in on this," he said. "The magic wand solution would be to find a way to attract more pilots and more students to the industry, either through higher pay or a combination of better working conditions and higher pay."

Hartz recommends clients interact with airlines. "Make them aware of opportunities because airlines are doing addition by subtraction. They are always looking at new routes and adding frequencies, either by replacing existing routes or squeezing more utilization out of their aircraft," he said. "The ones that are doing well are engaging with their airlines and working with their communities to push for routes, when they make sense."



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Creative Synthetic Turf Use for Airports

Uses for synthetic turf in airports can go well beyond pet relief areas.

Many airports have become familiar with synthetic turf while constructing pet relief areas to meet requirements of the Service Animal Relief Act that took effect on Aug. 4. What airport administrators may not realize, however, is the limitless potential that artificial grass has to create a multitude of deluxe services throughout airports, both indoors and out.

Consider this: a surface that provides the look and feel of natural grass, but can withstand the heavy traffic of the busiest travel center and can be used indoors. That's what today's synthetic turf provides. Now airport designers and administrators are no longer limited to traditional indoor surfaces. Synthetic turf gives airports the opportunity to expand their interior design conventions, and bring the outdoors inside the terminal.

HOW REALISTIC IS IT?

Some of the products available today are so lush and realistic that people have to bend down to touch the grass to see if it's real or synthetic. Imagine having a beautiful grass lawn inside the airport terminal, where travelers can forget

they are in an enclosed, sterilized space and take a moment to breathe and relax while they await their flight. The look and feel of natural grass gives people a sense of the outdoors and can provide a welcome respite from the stress of air travel. All of this can be accomplished by replacing a hard surface within the airport with a high-quality synthetic turf.

The products have been tested and proven in some extreme conditions. For the past eight years, for example, these products have been installed at the Epcot International Flower and Garden Festival that hosts a multitude of guests every year. The artificial grass provides a solution that allows this heavily-attended festival to offer lush, beautiful grass with the performance and resilience of a hard surface. Guests of the festival marvel at the beauty and realism of the grass and indeed have to touch it with their own hands to believe it isn't real.

PLAYGROUNDS

One of the applications for synthetic turf in airports is to create a safe play space for children who are traveling. Giving children the means to expend energy in a positive manner results in happier parents and less annoyed passengers who otherwise may have to deal with other peoples' frustrated children. Traveling with children is difficult enough. Offering a recreational space inside the airport that is safe, attractive and durable can go a long way toward improving customer satisfaction at any airport.

Synthetic turf is an excellent choice for indoor playgrounds, since it can be installed over a safety system that can protect children should they fall. It also provides a boundless play opportunity for children with wheelchairs, braces or disabilities that require an ADA-accessible surface (which is also suitable for wheeled luggage).



ForeverLawn Inc.

Synthetic turf is an excellent choice for indoor playgrounds, since it can be installed over a safety system that can protect children should they fall. It also provides a boundless play opportunity for children with wheelchairs, braces or disabilities that require an ADA-accessible surface (which is also suitable for wheeled luggage). Some products even offer anti-static protection for children equipped with hearing devices.

CREATIVE LEISURE SPACE

When designing spaces for travelers to relax and unwind between flights, ideas such as restaurants, coffee shops and seating areas with outlets to connect electronic devices are all excellent, and can also be revenue-generating spaces for the airport. The more these areas can be enhanced for comfort and appearance, the more that passengers will want to spend extended time in each area. Synthetic grass can be used to create an oasis in the coffee shop to give a guest the experience of having a coffee in the park, or installed near a window to give a customer the feel of grass beneath their feet while they watch the planes come and go.

Exclusive lounges for first-class passengers and other VIPs are also ideal places to consider incorporating artificial turf. Many passengers pay a premium for access to these elite lounges. Imagine creating a plush outdoor experience where passengers can be transported to a serene environment while they wait for their flight. This type of creative thinking can take an airport from a utilitarian travel center to a place where people actually look forward to spending their time.

DURABLE, ATTRACTIVE LANDSCAPING

While many creative opportunities exist for enhancing indoor areas with synthetic grass, it continues to be a smart choice for landscaping outside the terminal. Not only does synthetic turf require significantly less maintenance and water than natural grass, it also provides longevity up to 10 years or more depending on the product selected.

Synthetic turf can be used to improve the appearance of landscaped areas throughout the grounds of the airport, and offers the realism of natural grass with extreme durability and longevity. With less attention needed to maintain grassy areas, resources can be diverted to keeping other common areas cleaner such as smoking areas, bathrooms and other spots that require a significant amount of upkeep.

With drought and water usage on everyone's mind, the water savings alone can be a strong determining factor when choosing landscaping materials for airports. Since synthetic turf today mimics the look and feel of natural grass, without the need for water, fertilizer, lawn care equipment or other heavy maintenance, the question airports should be asking is: why aren't we using artificial turf?

ABOUT THE AUTHOR

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Wi-Fi: Convenient and Dangerous

Taking special precautions to protect your Wi-Fi network can save facilities, users and you from potential disasters.

Wireless Fidelity (Wi-Fi) is everywhere, extensively used and fraught with dangers. Outside of information technology professionals, few users understand how Wi-Fi works, its potential security flaws and the ramifications of improper design and use.

In the simplest terms, Wi-Fi is a means to connect a device to a network using radio waves. Once connected via Wi-Fi a device is no different than any other computing device on that network. Devices, your phone or notebook computer, connect to the network via a wireless access point (WAP) also known as a router (almost all homes have one) using the IEEE 802.11 standards.

WI-FI USE & DANGERS

Many businesses provide free Wi-Fi to their customers as an incentive, as a means for employees to connect to networks to facilitate operations, a path for operators to manage remote devices attached to the network(s) and the ability to rapidly pass information throughout their organization and share the information with others. Wi-Fi generally provides cheaper access to systems and in the case of managing remote devices (e.g., a security gate or door), eliminates the need for long runs of cabling. The aviation industry is no different when it comes to motivations and use of Wi-Fi. Unfortunately, along with the convenience and

cost savings associated with Wi-Fi also comes problems associated with unauthorized access to networks, theft of information, illegal control of remotely operated devices and in extreme cases the ability to compromise and shut down operational systems – both on the ground and in the air.

These issues might be dismissed as the stuff of science fiction or bad adventure novels, but they are real. Widely published reports have illustrated situations where airport virtual private networks (VPNs) have been compromised by the Citadel Trojan (a type of malware), passenger manifest and baggage information stolen from curb-side check-in via intercepted Wi-Fi signals, security equipment compromised, and airports and airlines information technology infrastructure hijacked in South Korea, Saudi Arabia, Pakistan and other countries compromising operational systems. There have even been reports, although not fully documented, that flight control systems in aircraft have been compromised as a result of Wi-Fi-vectored intrusions. While this extreme possibility appears remote and especially

unlikely, there have been widely documented cases of industrial control processors hacked and even destroyed via Wi-Fi -vectored attacks (this includes autos taken over through their 'On-Star' link).

WI-FI ON THE GROUND — DANGERS

Airports and airport located businesses offer free or readily accessible Wi-Fi, including airports themselves (the port authority), restaurants, bars, airline lounges, etc. to customers. Many of these WAPs are free, open (do not require a password) and are not encrypted (all information is transmitted in clear format). So if it is free and open, that is a good thing, right? Yes, the free part is great. Unfortunately, the balance is quite problematic.

First, an open WAP is available to everyone creating a two-way flow of data between the device and the network. That in itself is not problematic but open WAPs can be easily compromised with malicious software (malware) and that malware can then be downloaded to the user's device which can move to any network that device connects. Malware has the ability to capture information, key strokes, copy and/or replace files and even take over a device for nefarious purposes.

Second, users connecting to non-encrypted WAPs might as well stand on a table and shout their information as they transmit because those unencrypted signals are easy to intercept. This is known as a man-in-the-middle attack. If the user is just checking the news or weather there is no real issue but most users check their emails – personal and business – revealing account IDs and passwords, text personal information and in some cases shop (providing payment information) and view financial



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information. WAPs with password protection (airline lounges) have more security but passwords are often weak, infrequently changed, and in one case known through personal experience, the password is provided on slips of paper at the check-in desk.

There have also been reports of individuals setting-up fake WAPs and tricking people into connecting to them by letting them believe

they are receiving something (internet access) for free. Once connected, a user's device is compromised. A new and widely spreading scheme is for the criminal to lock the compromised device, then send an email to or call the device owner demanding ransom. So what can be done? Unfortunately with open WAPs, very little with the exception of clearly warning users of the dangers and encouraging vendors to continuously scrub their routers for malware and shutting down fake WAPs. This is usually the responsibility of the facility's IT department that is already overtasked.

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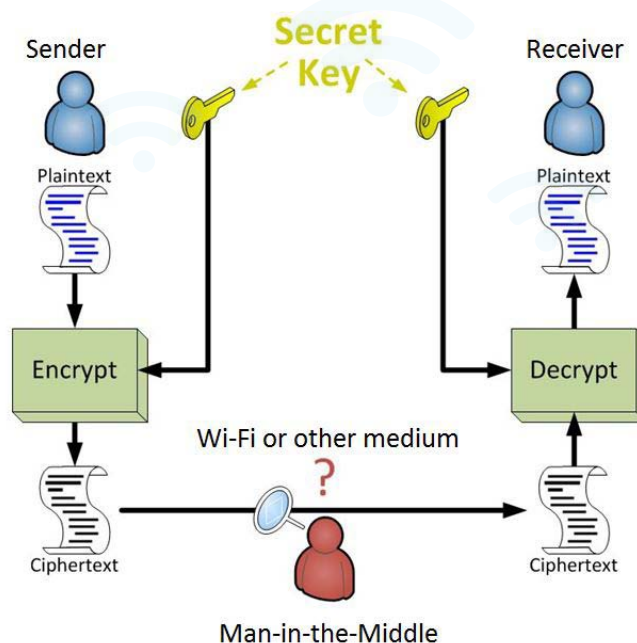
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Example of how encryption works.

Steven Simon

WI-FI ON THE GROUND — SOLUTIONS

The ability to protect a network is greatly improved once the public domain is excluded. Networks accessed exclusively by internal users should be completely 'locked down.' This means at a minimum, the networks are password protected (using strong passwords), encrypted (a means to encode the transmissions) and fully separated from those networks used by the general public. Strong passwords consist of at least eight characters (the more characters, the better) that are a combination of letters both uppercase and lowercase plus numbers and symbols (@, #, \$, %). While these passwords are harder to remember, they are harder to 'crack' making the network more secure. While strong passwords are recommended they can still be broken. This is accomplished by using password cracking tools such as Reaver, a free, open-source tool designed to exploit security flaws in most routers. Encryption is a means to encode

the information transmitted using a mathematically generated formula or 'key.' As with passwords, the more robust the encryption and key, the stronger the network protection. Both software and hardware based encryption is readily available on the open market. Proper configuration of WAPs as well as the networks themselves is critical, including using strong encryption, regular password changes, ensuring that factory settings are changed before the device is placed in use and closing virtual ports that are not actively in use.

Most public WAPs broadcast the name of the network (also known as an SSID — service set identification) for any device to see. The SSID broadcast makes it easier for computers and phones to find and connect to these devices. If the private network is broadcasting its SSID, network managers are facilitating 'wardriving,' a technique where an individual uses a wireless device to find and identify WAPs and their networks. Even though the network is not broadcasting its SSID, it is still available to users with administrators either configuring a user's device or providing instructions on how a user can connect. Like other measures, this does not eliminate the security issue as skilled hackers with the proper tools can identify the network's signal, but does make it harder to penetrate by non-skilled unauthorized users.

The aviation industry has embraced 'bring your own device,' where employees can use their personal devices at work. This provides cost savings to the operation and convenience to the user but is very problematic. If the user acquires malware on their device (for instance while using it at home) and connects to the work network, it is highly possible that the malware will

Strong passwords consist of at least eight characters (the more characters, the better) that are a combination of letters both uppercase and lowercase plus numbers and symbols (@, #, \$, %).

move and infect the work network and every device attached to it. This line of thinking should also be applied to work-issued devices that are given to an employee, used outside the workplace (attaching to other networks) and then reattached to the work network. As an example, airlines issue pad computers to their flight crews eliminating the need for paper charts and approach plates. Policies for network use and work-issued devices are critical to managing this problem, while education of users to the dangers should be mandatory. Many organizations hire 'white hat' hackers to test their networks for security issues and may even send phishing emails to their users to gauge the effectiveness of training and end user behaviors. These services are also widely available on the open market at reasonable prices.

In many locations, 'public' and 'private' networks are one and the same with traffic separated by firewalls. Firewalls provide a means to restrict movement into and within a network and can be either software or hardware based. They are rule-based, meaning that as an example someone has determined who can or cannot access the network, what different users are allowed to access and what information can

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be exchanged with other networks. Firewalls are an excellent tool to ensure security but like all forms of network security they are not infallible. They are developed and maintained by individuals and therefore are subject to errors. Even the best firewalls can be compromised. Therefore, the most secure means to 'lock-down' the private network is to completely separate it from a public network, sometimes referred to as 'air gapping.' This means that there is no possible path between the public and private networks. In other words, two separate networks exist completely isolated from each other. While more expensive (requiring separate servers and WAPs) than partitioning networks using firewalls alone this scheme

A stronger solution to optimize security to protect a small number of 'high-value' users and their assets (including the aircraft) is to use hardware-based encryption.

is orders of magnitude more secure. This is especially important for operations networks, networks that control physical access such as gates and security doors or transmit security camera feeds, networks holding critical or personal information e.g. passenger databases, and even voice over internet protocol (VOIP) communications. When air gapping a system, ALL paths into and out of the network should be considered.

Claims have made that aircraft control systems could be compromised using an attack path through the aircraft's entertainment system. The vulnerability: both the entertainment system and cockpit (including flight control systems) shared the same communications bus. While manufacturers claim the problem never existed, the point is that if the systems were completely separated, the attack vector would be eliminated.

BUSINESS AVIATION — SOLUTIONS

It should become apparent from the examples above that the fewer individuals on a network

the easier it is to secure. There has been ongoing concern in business aviation, especially among large companies operating their own fleets, about the security of communications.

It seems that senior executives and VIPs who regularly use aircraft immediately connect to an aircraft's Wi-Fi as soon as they board and conduct proprietary and sensitive business. Since there are few passengers onboard a business aircraft and once the plane is airborne most assume that no problem exists. Unfortunately, there have been cases where the transmission has been intercepted between the aircraft and its ultimate destination, placing proprietary information in the hands of unauthorized individuals.

The fact that corporate espionage has grown in recent years should come as no surprise given many media reports of breaches. Many organizations are using virtual private networks (VPNs) to provide security while placing firewalls around the networks. VPNs provide an encrypted 'tunnel' through the internet. This encrypted path provides users with enhanced security from unauthorized access. These techniques do provide improved security but again there have been a number of cases where VPNs have been compromised.

A stronger solution to optimize security to protect a small number of 'high-value' users and their assets (including the aircraft) is to use hardware-based encryption. The scheme used by most militaries around the world is available to users on the open market. The system consists of a small hardware device (encryptor) added to the aircraft's communication panel that encrypts the outgoing transmission before it is passed to the aircraft's communication system and decrypts signals after they are received. The same type of device must be placed in the IT system where the aircraft's transmission is received. In this case, the most likely location would be the IT system at an organization's headquarters.

The encryption 'key' (a mathematically derived, prime number based formula) is loaded into both encryptors (in the aircraft and at HQ). As long as both encryptors are active and have the same key loaded, the transmission is secure from compromise. A system of hardware-based encryption is similar in nature to a VPN but much more robust. Organizations can generate their own encryption keys (strength depending

on their unique requirements) and change the key as often as they feel is necessary (hourly, daily, weekly, etc.). A system of hardware-based encryption is transparent to the user meaning that senior executives would not be bothered with additional passwords, key fobs with rolling codes or challenge questions. They would log into their devices as usual, connect and work. A system of hardware-based encryption works equally well for hard-wired connections as it does for Wi-Fi. Of course, this system of hardware devices and software keys is much more expensive to operate and manage than a VPN but provides military-like security.

Wi-Fi and computer networks are pervasive, widely used, beneficial to organizations and individuals and fraught with danger. Perhaps the most important recommendation is to continuously train and educate users! The most desired solution has been and will always be a magic 'box' provided by the IT department to solve all security problems. Users need to understand the dangers lurking at the next website or in that 'too good to be true' email they just received. No matter how strong the password or the encryption key, or how cool that new technological tool is, security is a requirement and job of every user. It is the responsibility of every organization to insure their users are trained, educated, and tested to protect their networks. It only takes a single user connecting to that infected device or clicking the wrong link to compromise everyone else.



ABOUT THE AUTHOR Steven "Doc" Simon

Steven "Doc" Simon holds a PhD in information technology and international business from the University of South Carolina and is currently an associate professor at the Stetson School of Business and Economics at Mercer University in Atlanta, Ga. He is a retired Navy Captain having spent most of his 26-year career in information technology operations and cyber security. He served as the Commanding Officer (CO) of the Department of the Navy's Communication Security (COMSEC) System, CIO/J-6 for US Strategic Command's WMD Center, director of the Cyber Security Center at USNA, and CO of NR Naval Information Operations Center – Georgia.



RECOGNITION MATTERS

Be sure to read *Airport Business's* November issue



Airport Business magazine's November issue will recognize 40 individuals under 40 years of age who are the best and the brightest for their contributions to the industry and a "job well done." It is not a ranking, but rather a listing of individuals who have shown initiative, leadership, or have made an impact to the aviation industry.

Whether you work in general aviation, business aviation, airlines, FBO, military, or education, *Airport Business* will acknowledge you or your colleagues for dedication to the aviation industry.

Criteria for selection includes such things as job commitment, industry involvement and contribution, achievement in his or her position and innovation in his or her field. While no candidate may possess all criteria, we are looking to reward those who deserve recognition for their efforts.

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Not Yesterday's Lease — Revisited

New challenges in lease negotiations between airports and tenants can be met with planning and consideration for the future.

Negotiating a lease is still one of the more difficult challenges facing airport management and tenants today. Both sides are trying to get the best business deal, while recognizing that they have to live with this business partner for the next 20, 30, maybe even 40 years. So maybe trying to squeeze out that last dollar from that lease isn't really that important in the long run. A lease represents a partnership, and a partnership must be beneficial to both parties in order for it to thrive. Regardless there are several new paradigms that tenants and landlords are dealing with today, as well as some of the same challenges that have been around for decades.

MARKET VALUE

The approach of most airports has historically been to focus on getting market value (or fair market value) from all of their leases. The justification is usually "the FAA requires us to." However, a few years ago the FAA somewhat changed, or at least clarified, its position with regard to market value. In simple terms, the FAA now states that airports must get market value/market rent for leases of non-aeronautical properties. Market rent is defined as: The most probable rent that a property should bring in a competitive and open market reflecting all conditions and restrictions of the lease agreement, including permitted uses, use restrictions, expense obligations, term, concessions, renewal and purchase options, and tenant improvements (TIs). On the other hand, the FAA states that aeronautical leases must be

"fair and reasonable."

So what does this mean? For non-aeronautical properties, it means that an airport should base their lease rates and terms on what the market is recognizing for similar non-aeronautical properties in the surrounding and/or similar and competing marketplace around the airport — not on the airport. With non-aeronautical properties, you are competing with other non-aeronautical property in the neighborhood, not with other airports in most cases. It also dictates that consistency with the non-aeronautical marketplace should not only look at land/property values of similar properties in the neighborhood, but that other lease terms and conditions should also be considered. This includes such items as lease term, rates of return, adjustment mechanisms, etc. While these factors may ultimately be similar to what you are able to gen-

erate on the airport, they could be more or less depending upon the supply and demand characteristics of both markets. For example, while you may be able to get a 10 percent rate of return on "appraised" values on-airport, the market rate of return for similar properties off-airport may only be 7 percent to 8 percent. As such, in order to maximize your development opportunities from non-aeronautical land or facilities owned by the airport sponsor, you may need to expand or narrow your definition of the competing market. It all depends upon who you are competing with.

With regard to aeronautical properties, the FAA uses the term "fair and reasonable." Why does the FAA do this? In my opinion, it stems from the recognition that airports are unique and the number of active market participants — those that are looking to lease property on an airport — is much more limited than for off-airport, general real estate opportunities. Nevertheless, if you refer back to the definition of market rent, you can see that much of it still applies. The challenges facing aeronautical tenants are much more significant, although some factors are consistent with their off-airport cousins. While some airports derive their rental rates through the analysis of off-airport land values and the application of a pre-determined rate of return, it is my experience that this methodology is the exception rather than the traditional practice at airports. Nevertheless, it is still common for some airports to compare sales of off-airport, non-aeronautical real estate to support the value/rent for on-airport aeronautical property. However, the unique characteristics of aeronautical properties are not reasonably compared to off-airport properties utilized for non-aeronautical purposes. The comparison with off-airport land values is

deemed inappropriate for a number of reasons.

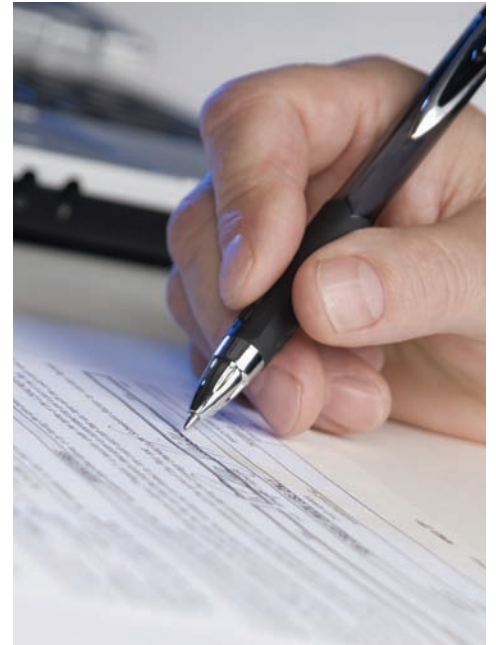
- Lease conditions (leasehold interest vs. fee simple ownership)
- Lack of benefits of land ownership (appreciation)
- Lack of a purchase option
- Reversion of improvements or the cost of demolition upon lease expiration
- Lack of subordination
- Difficulty in assigning a lease interest
- Undetermined and unpredictable rent escalations
- Aviation use restrictions
- Difficulty in obtaining and the increased cost of leasehold financing
- Differing supply and demand characteristics
- More limited demand due to fewer market participants compared to general real estate

My opinion has not changed over the years — airports should derive their rents through a comparison and analysis with other similar

and competing airports within their region and/or competitive marketplace. In many cases, the competitive marketplace may extend to a national basis depending upon the type of property or activity. While it is not an exact or perfect method, it is more likely to provide an “apples to apples” comparison that is fair and reasonable to both parties.

OTHER CHALLENGES

So now what? Comparing “airports to airports” and “airport properties to airport properties” is challenging at best. As the saying goes, “If you’ve seen one airport, you’ve seen one airport.” In other words, if you found two airports exactly alike, you won’t find two properties on those airports exactly alike. Similarly, if you find two identical properties, the airports are probably very different. Therefore, you almost always have to make some subjective “fair and reasonable” adjustments and/or concessions



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TENANT RELATIONS

to generate something usable for comparison. Unfortunately, your definition of “fair and reasonable” is probably going to be very different from your counterpart across the table in a lease negotiation.

Unfortunately, that is just where the challenges start. Airport leases do not happen every day. If an airport does a new lease every two to three years, they are pretty busy. If you want to specifically look at a particular property type on an airport — cargo, FBO, corporate hangar, MRO, etc. — the time between new leases may be more like 10 to 20 years. For those of you that have read my past articles, you know that I am an advocate of comparing similar property types/uses as opposed to a one-size-fits-all rate for all airport property. I emphasize the term new lease because there are major differences in current lease rates that have recently been negotiated compared to those that have been adjusted over time by the CPI or other index to yield the current rate. Even if the current rate is set by an appraisal or market rent analysis to adjust the rate to “current market levels,” there are several issues that most airports and their appraisers/consultants typically fail to recognize.

First of all, markets change. A lease negotiated in 2007 at the peak of the economy and aviation market is likely inappropriate for consideration today, even if — and probably especially if — it has been adjusted over time based upon some index. Even if it has been reappraised, most lease terms and conditions provide that a rate cannot go down, regardless of prevailing market conditions. Second, every lease has a different genesis, even if it was negotiated at the same time as another. This is where fair and reasonable, as well as equitability, comes into play.

Let’s say that there is a cargo development on an airport that was constructed 20 years ago at a cost of \$20 million that has a 50-year ground lease on a 20-acre site with rent fixed at 10 cents per square foot for the full lease term. A developer approaches the airport about a new \$5 million cargo development on a 5-acre site, and would like the same 10 cents per square foot fixed rent deal for 50 years as the existing project. Can/should the airport agree to these terms? While it depends, it is sometimes the right answer, in this case the answer is a resounding no. First of all, the existing lease is 10 years old. Even if it was adjusted periodically by the CPI or other

index, it is still a 20-year-old lease. Second, the FAA does not look favorably on 50-year or fixed rent aeronautical leases today. Third, a site reflecting one-quarter of the land area of another, and capital investment of 25 percent of another, may warrant some consideration for adjustment. Basically, the lease terms proposed by the developer are not equitable to those of the existing lease, because the only real similarities are that they are both on the same airport and both are for cargo developments.

The same approach comes into play when you are comparing rates between airports. While airports are not created equal, neither are leases. Unfortunately, many airports and tenants want to look at lease rates and terms at face value, without delving into the details that may tell a completely different story. Some of the things that can and do ultimately impact the lease rate include:

- Date of lease commencement
- Lease term (number of years) and renewal options
- Adjustment terms
- Initial capital investment requirements (both in facilities and infrastructure)
- Future capital investment requirements
- Location
- Existing competition
- Minimum standards (barriers to entry)
- Lease structure (triple net or airport paid expenses)
- Other rates and fees
- Rates of return

In addition, there is often a significant difference in the rate that an airport quotes to a prospective tenant and what they are actually able to get from that tenant after all of the terms and conditions are negotiated. Again, it comes down to neither party taking information at face value without getting into more details that may tell another side of the story. While the above factors come into play on every lease, they are even more significant when they are tied to a commercial aeronautical business. Commercial aeronautical businesses are in business to make money. As such, the above factors can have a dramatic impact on their ability to amortize any investment that will drive their interest in locating at a particular airport. While I am not suggesting that an airport needs to cater to a prospective business to ensure they make money, it is imperative that they understand that they

do have to obtain a reasonable revenue stream in order to maintain facilities, retain employees, and grow the business. This is obviously in the best interest of the airport as well. At the same time, the business needs to realize that the airport has a fiduciary responsibility and must ensure that the airport is developed in a methodical manner and reflects a tenant base that provides the array of services demanded by tenants and users of that particular airport.

THE REST OF THE STORY

I have tried to address some of the major challenges that I see across the country with regard to leases. “Things are not always as they seem,” is extremely prevalent in the aviation industry. This is not anyone’s fault in particular, just one of the obstacles to running a successful airport or business within limited time and resource constraints. It is imperative that both sides in a negotiation are operating from an informed and educated position, so that each side can have a clear understanding of the challenges of the other while trying to facilitate a deal that benefits everyone.

It all comes down to information. When it comes to airports, every lease sets the precedent for the next lease. However, every “good” lease sets the precedent for the airport’s negotiating position, while every “bad” lease sets the precedent for the tenant’s position. Sometimes the key to a successful deal is that both sides feel like they have lost, and other times that each feels like they have won. The reality is that there should probably be a little of both experienced by both sides of the table, but with enough reliable and detailed information to understand why you won or lost.



ABOUT THE AUTHOR

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Hodges is the president and CEO of Airport Business Solutions, a diverse aviation valuation and consulting company based in Tampa, Fla. Airport Business Solutions assists airports and aviation businesses worldwide on a variety of property, business, operational and marketing issues. Michael is also the president and CEO of ABS Aviation, a contract management company for FBOs and general aviation airports.



Alabama Aviation Hall of Fame & Southern Museum of Flight

I was the guest speaker at the 2016 Alabama Aviation Hall of Fame (AAHOF) Banquet & Induction Ceremony this year. It was held in the Southern Museum of Flight (SMOF) — rather than a grand ballroom as in the past — and I'm so glad that it was.

Y'all, the Southern Museum of Flight has improved dramatically since I saw it. But don't take my word for it, check it out yourself at: www.southernmuseumofflight.org.



The AAHOF is housed on the second floor of the museum, so after you've seen many respected, old aircraft and engines downstairs, you can go upstairs and see many respected, old aviators. You're bound to know some of them. I know you do, because — I just gotta brag about it — I'm in the AAHOF myself.

The Museum and the Birmingham-Shuttlesworth International Airport (BSIA) should have a symbiotic relationship (remember when "symbiotic relationship" was a hot topic among the intelligentsia?).

Most pilots are great fans of aviation museums, particularly one that is near an airport. The SMOF is 2.9 miles (per MapQuest) from the BSIA. 2.9 miles! That's close, folks, and should be a cheap ride by Uber, Lyft or taxicab!

I've looked at the websites for the museum and the airport and found nothing — repeat, nothing — about the museum on the airport's site or about the airport on the museum's site. Are they both missing out? I think so.

Seems to me that each should brag about the other. The airport could be the landing site for people going to the museum, and pilots going to the museum would thus be introduced to the airport. General aviation pilots, as we all know, are always looking for a great place to fly. In the past,

they were likely to fly 50 miles away to eat a hundred-dollar hamburger for lunch among other pilots. Just think how great it could be to take the family/friends to a real, fascinating, based-on-history aviation museum.

Airports often give tours to student groups. Wouldn't it be great for such groups to also take a tour of the museum on the same day?

Shouldn't the museum website point out that the full-service BSIA airport is only 2.9 miles away?

Wouldn't it be terrific if the Chamber of Commerce and other influential groups began to think of BSIA and SMOF as two important parts of the city's history and appeal?

BTW, this is not my original idea. I first began to think of this when the Udvar-Hazy Space Center became thought of along with Dulles Airport and the downtown Smithsonian Museum.

Hey — if it will work in Washington, it should work anywhere!



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Clear the Air and Old Equipment

The FAA's VALE grant is designed to improve airport air quality, but it also gives you a chance to update and standardize equipment for better operations.

Metropolitan areas across the country keep initiating projects to clean up the air and reduce pollution. While airports are only one part of the community, leaders can use efforts to clear the air to also upgrade equipment and bring a new level of service to the airfield. Michael Thompson, director of facilities for the Birmingham Airport Authority, said the airport decided to look at improving air quality due to ozone and small particulate matter issues throughout Jefferson County, Ala.

Leaders decided to install charging equipment for ground support equipment, so airlines could convert to electric vehicles and in the process reduce emissions and operating costs. It was funded using part of a \$2.5 million Federal Aviation Administration (FAA) Voluntary Airport Low Emission (VALE) program grant.

"We wanted to do our part and do what we could to reduce emissions in and around Jefferson County, so being good neighbors is one part," he said. "The other part kind of tied into this sustainability aspect of our terminal modernization project and the fact that we now have an enclosed baggage make up area so with ground service equipment and

tugs running constantly and exhaust fumes building up in that room, that was kind of the beginning of the idea of the project."

Thompson said they didn't look at any particular projects to model the Birmingham improvements on, but seeing as it was a VALE program, leaders were familiar with the project idea seeing as it was their fourth grant through the program.

"It all comes back to that terminal modernization program, which we got LEED Gold for," he said. "It fit in with the 400 Hertz units and the aircraft AC units that we put in as part of the modernization project. It was all kind of a byproduct of that."

CLEAN AIR AND NEW EQUIPMENT



VALE-funded equipment is branded with stickers to show what was purchased as part of the program.

Columbus Regional Airport Authority

John Trendowski, PE, principal engineer with C&S Companies, said VALE and other FAA and U.S. Environmental Protection Agency (EPA) grants provide funding mechanisms to improve the environment and air quality on airport property. One of the challenges the airports face is timing and meeting the FAA schedules to get the grant applications in in order to move the projects forward.

Airports in general have focused on electrical and preconditioned air projects as part of VALE grants, he said, which are a lot more cost effective.

"We see a lot more interest in terms of electrification of ground support equipment," Trendowski said. "Ground support is kind of the next phase where you can achieve some significant emissions reductions either through electrifying or converting to some sort of alternative fuel and moving away from diesel."

Ralph Redman, EV SP, managing planner for C&S Companies, said the two biggest forms of emissions at the airport come from the aircraft and ground transportation. Lessening either of those two sources can be beneficial compared to replacing stationary equipment, such as boilers or generators, which are not as cost effective to replace.

"When you're taking into account the VALE money is really dictated on what the cost effectiveness of it is, how much is FAA willing to give out versus how much emissions is being saved," he said. "Those are the projects that score really high in the hierarchy of the VALE

funding so of course you want to go after that."

Redman said more and more airlines are hopping onto these programs as well because they recognize the benefits to them and are now taking these opportunities to the airports to make changes. Trendowski said a lot of the requests for electrification of ground support equipment has come from large hub airports because the airlines are taking initiative on the project because they have more ground support equipment at the larger hubs.

"It's starting to move down to the medium hubs in the future," he said. "Whether it goes to the small hubs it may be difficult because a lot of those have fixed base operators that work for a number of airlines."

"But one of the advantages out there when talking about VALE, if you're a small hub, they'll pay for 90 percent of the cost of the project compared to medium and large hubs where FAA is matching only 75 percent."

Redman said the record keeping to follow on the VALE project can scare some airport sponsors away, but proper planning can make it easy to continue with.

"If you are going to use the emissions reduction credits in the future, there's certainly a lot of follow on coordination with the local air quality district to be able to apply those," he said.

When planning the charging stations, Thompson said they initially started talking with Delta Air Lines and Southwest Airlines, which are the two biggest carriers at Birmingham. The airport initially planned to start small with the project with 10 to 12 total chargers, but after seeing what the airlines wanted, they ended up putting in 27 charging stations.

The airlines supported the project, Thompson said because a conversion to electric vehicles reduced maintenance issues and the reduction of costs in fuel. Birmingham



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"They wanted to do the full program upfront," he said. "The locations and logistics weren't so much of an issue as was getting them into that capital expenditure was a little bit of a challenge because we were in between their budgeting cycles, but once we fully explained the project to them, they took off and did all 27 charging stations."

While both airlines were on board with a conversion to electric vehicles for ground support equipment, Thompson said there was a challenge in making the project work because both Delta and Southwest had charger preferences to work with their equipment. The authority put out RFP with two different specs. During the process, the airport learned it was able to find a solution to cut down on costs and maintenance.

"One company came back and said 'hey we can actually meet both specs and the only thing that would really be required is an adaptor from the Delta side and we can have one charger that will meet both specs,'" Thompson said.

UPDATES TO MEET NEW DEMANDS

David Whitaker, vice president-business development & communications for the Columbus Regional Airport Authority said a project concept at John Glenn International Airport (CMH) came about after the leaders wanted to get ground power and air conditioning units to all the jet bridges and have consistency of equipment on all of the bridges.

The authority reached an agreement to purchase the jet bridges from the airline carriers in 2010, Whitaker said. When the carriers purchased the units prior to the authority takeover, some decided to not put equipment on them and others used different types of equipment, which created challenges.

The agreement between the authority and air carriers said the airlines would pay the maintenance of the units and the airport would come up with a plan to standardize and have uniform equipment across all the bridges.

C&S Companies consulted Columbus on the design and Ameribridge Services Inc. also assisted in the project.

"The program provided that opportunity to help with the funding and also to help with the emission objectives," he said. "It was a win-



An adaptor was available with one charging unit for Birmingham so both Delta and Southwest could use the same equipment.

Birmingham Airport Authority

win in that sense. We were in a need for some equipment and desire to reduce our footprint and to form to the federal VALE program, to meet the criteria and be successful."

Whitaker said after Columbus took control of the bridges, it began a program of retrofitting units and replacing bridges that were at the end of lifecycle under an aggressive plan.

"It did turn out in that assessment we had a great need for additional units," he said. "By evaluating the program criteria we determined that we would be eligible for 13 ground power units and 11 preconditioned air units."

Whitaker said CMH had 11 bridges without air. The process of getting the equipment was pretty straightforward. The ground power side was more complicated because the equipment needs to line up with the type of equipment being used by the carrier coming into the gate.

"If you had a ground power unit that wasn't meeting the requirements of the plane that was using the gate you were eligible for a new one, but you couldn't replace one ground power for another unless you had a demand for it, such as right aircraft type," he said.

Some of the old GPUs were either straight DC or AC power units. The new ones can work for both.

Columbus also discovered it needed additional electrical capacity for the program, which meant the airport needed a new substation.

"If you had a ground power unit that wasn't meeting the requirements of the plane that was using the gate you were eligible for a new one, but you couldn't replace one ground power for another unless you had a demand for it, such as right aircraft type."

DAVID WHITAKER, VICE PRESIDENT-BUSINESS DEVELOPMENT & COMMUNICATIONS FOR THE COLUMBUS REGIONAL AIRPORT AUTHORITY

That was an ineligible part of the program. Claypool Electric installed the substation.

The authority also needed to consult with Delta, American Airlines and Frontier Airlines for the substation project.

"We needed a location for a substation and much of the airport is at full capacity, so we had to find those areas and find those pathways, conduit pathways coordination for that," Whitaker said.

Ray Fridley, project manager-planning and engineering for the authority, said the new systems are also hooked into the airport's monitoring system to give operators a new view on how the equipment is being used.

"Not only does that tell us what energy system we're using, but it also gives us a picture about the way that jet bridges are being used," Kennedy said. "They weren't metered independently and some of the equipment was owned by the airlines so this transition to the airport authority control of those assets gives us better visibility both from the energy and the maintenance standpoint, so we have a much more visible awareness of how those assets are being used today than we did before."

CREATE PARTNERS IN CHALLENGES

Dale Stubbs, associate vice president and market sector manager for AECOM, said planners were flexible with the airlines in meeting their needs and through the bid process the adaptor solution came forward to meet the needs of both.

Thompson said they were the intermediary with the airlines to coordinate between the vendor and company to address concerns with the one charger working for both of them. "To my knowledge, I don't know if they've done that in any other application," he said. "They certainly weren't aware that that charger could work with both given the adaptor kits."

When planners were laying out the locations for the chargers at each gate, Thompson said they had to make sure they were accessible while not interfering with other operations. Because of the work done on the terminal the process was expedited, Stubbs said, due to the terminal modernization project.

"There was an extensive effort at the beginning of the design to really identify where we were going to put them, how we were going to get power to them and that worked out very well," he said.

Neal Wolfe, who was an environmental consultant at the time of the project with LeighFisher, said there was a challenge in the time perspective of the project because the FAA was late in giving notice to proceed with the project. Normally, it would take six months to get it done, but Birmingham had three months.

"Surprisingly, one of the more challenging things is coordinating with the airlines and figuring out when they were delivering their equipment," he said. "I was very pleasantly surprised in working with them and the FAA on the timing of this."

Darcy Zarubiak, who was also a consultant with LeighFisher on the project, said the Birmingham project is especially noteworthy because there are not a lot of airports

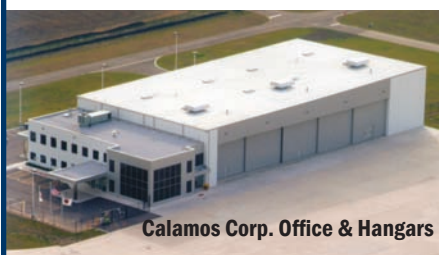
of that size undertaking GSE electrification projects and because the airlines committed to owning new equipment for 13 years.

"This is very good project, this is a model of what should happen, the finance work on it, but yet it's not happening," he said. "It's not happening because it takes that extra effort to make such a project happen."



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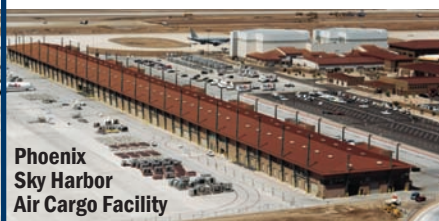
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Walking through an airport can be more than half a mile from curb to holding room, which creates a challenge for the elderly. Corgan

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Using wearable technology can show designers the challenges the elderly have when accessing airport space.

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Our study focused on three restricted abilities that require advancement in universally accessible airline travel: mobility, sight and hearing.

MOBILITY

Mobility is one of the most daunting challenges faced in designing airports. The tremendous space required by airline operations often mean that the passengers have to traverse great distances to get from curbside to holdroom. It is not uncommon to walk half a mile or more from the terminal curbside to one's seat on the aircraft. At this point, however, the passenger's journey is really only half over. A nearly identical process occurs in reverse upon arrival at the destination airport.

To test mobility, our study tasked volunteers to participate in a mock travel experiment. We started at the curbside and gave each participant a roller bag and had them re-create the typical travel path within an active airport terminal. With the exception of TSA Screening, due to actual screening operations at the terminal, the entire process included the typical steps a passenger would be expected to



Much like the goal to reduce visual clutter with the airport terminal, sound and volume levels need to be taken into consideration to create a more peaceful, stress-free travel experience. Corgan

perform: curbside drop-off, airline check-in and baggage check, using airport maps and flight information displays, navigating to departure gate, use of terminal amenities all the way through exiting the secure area of the concourse and claiming luggage. The experiment even created a last-minute gate change to force our participants to adjust to an unanticipated situation.

Our results showed:

- The amount of bending and maneuvering when traversing the terminal was the biggest challenge
- Participants needed greater concentration when approaching an escalator
- Restricted neck movement made it harder to read signage
- Even in open areas, participants felt constricted due to the fast pace of others

- The distance required for walking seemed daunting
- Retrieving luggage from the baggage claim difficulties

In designing future terminals, overall walk distance by passengers must be addressed. Since the constraints at each airport are different and the factors influencing them can fluctuate greatly based on factors such as tenant airline and fleet mix, each solution is unique to the airport it serves and there are supplements that can reduce the overall travel distance such as moving walkways, inter-terminal shuttles and automated people movers. Our research shows that an aging, mobility impaired passenger requires twice as long to navigate a terminal as a younger ambulatory passenger.

Another interesting observation from our studies was an anxiety mindset created from

uncertainty while navigating a new space. The passengers in our research realized that mistakes during their journey meant the possibility of doubling their effort to reach their destination. The possibility of a wrong turn created hesitancy and doubt in an already stressful situation. This hesitancy can lead to passengers missing obvious queues or wayfinding signage that would have guided them to their correct destination.

In fact, our findings like this have a profound effect on the evaluation of wayfinding signage. If the passengers most in need of directional wayfinding signage are the very passengers focusing the majority of their attention elsewhere, they are missing the signage meant to help them navigate.

SIGHT AND SOUND

Design that anticipates the adverse health conditions experienced by our increasing aging population will make airports more responsive to passenger needs. Not only in the U.S. but around the world, designers need to create spaces that address myriad health-related maladies, all while remaining cohesive, cost-effective and resilient. Of the five senses — sight, hearing, touch, taste and smell — only two — sight and hearing — can be dealt with effectively in the built environment. As designers, sight is the sense on which we have the biggest impact. When planning a terminal we have the ability to control light levels and the passenger's perception of the space. Most designers envision an ideal passenger that appreciates the sense of space and is aware of the subtle changes in architecture that queue direction changes and make the journey from entry door to gate, seamless. This is not the case in most airports. The amount of visual clutter such as advertising, concessions and airline signage is staggering and often in direct conflict with the existing building design.

As the traveling public ages, an increased number of passengers will suffer with common eye diseases. We must acknowledge and consider these individuals' needs. According to the National Eye Institute, low vision, macular degeneration, cataracts, diabetic retinopathy, glaucoma and retinitis pigmentosa rates in the U.S. are rising rapidly. More passengers with moderate to severe eye diseases are a larger percentage of the flying public than ever before.

TERMINAL DESIGN

Similarly, age-related hearing loss is one of the most common conditions affecting older and elderly adults. Known officially as presbycusis, this hearing loss gradually occurs in most of us as we grow older. The National Institute on Deafness and Other Communication Disorders (NIDCD) states, approximately one in three people in the U.S. between the ages of 65 and 74 has hearing loss and nearly half of those older than 75 have difficulty hearing. Hearing loss can make it hard to understand and follow verbal instructions, public announcements and respond to warnings like smoke alarms. It can also make it difficult to enjoy conversations, leading to feelings of isolation.

To test eyesight and hearing ability, our study asked participants to utilize wayfinding signage and the public announcement system to orient themselves as they journeyed through the terminal.

Our results showed:

- Glare caused by bright sun and white/muted finishes made it challenging to read signs
- Backlit signs were easier to identify/read, especially at long distances

- Participants were surprised at how dark their surroundings seemed
- Hearing was muffled, low and distant and comprehension required intense focus on audio source
- The PA system was the only sound easily identified but over time was ignored as background noise

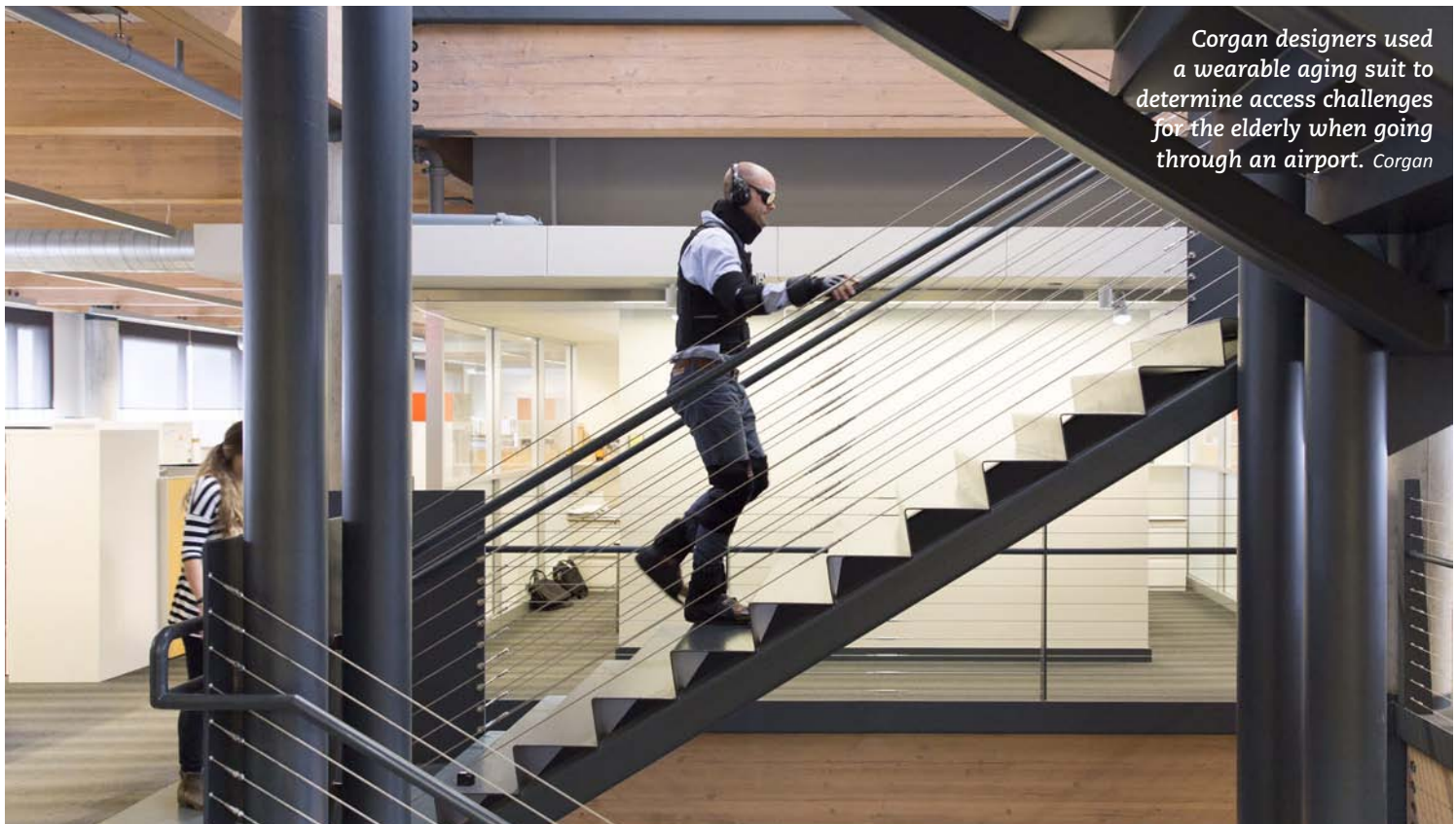
SUGGESTIONS FOR ENHANCING PASSENGER EXPERIENCE

There are a number of options for enhancing passenger experience for new and existing airport terminals. As more aging passengers continue to fly for work or leisure, areas of innovation and improvement can easily be addressed. Targeted fixes can then be implemented as part of larger modernization programs. Innovations that address limitations of aging passengers' mobility, sight and hearing create an airport terminal experience that provides a better outcome for passengers, airlines and operators.

Innovations for mobility improvements with the travel experience span from drop-off to the departing plane to pick up at the final

destination. Enhancing passenger experience starts at the curbside, with the creation of areas with level transitions and special loading and unloading areas for mobility-challenged passengers located close to check-in areas. Allowing elderly passengers to bypass queues during the check-in process reduces fatigue and chances for falls. The process of acquiring escorting privileges for caregivers can be made more robust and easier to obtain, relieving the airport or airline from the responsibility of providing that service.

Another area of improvement involves creating additional information regarding procedures and passenger routes and making them available online so that concerned passengers can get a sense of their journey in advance of their actual flight. The location and frequency of terminal maps including point-of-view style maps oriented to the passenger's position in the terminal is another potential improvement. Information desks should be staffed by individuals willing to escort and assist aging passengers, should they become disoriented. The integration of smartphone technology could



Corgan designers used a wearable aging suit to determine access challenges for the elderly when going through an airport. Corgan

provide turn-by-turn style directions within terminals for passengers in need of special assistance.

Designing airport terminals for an aging population will take a concerted effort from designers, airlines and airport operators. It will take a strategic effort to create spaces that respond to the sight limitations passengers have now and will have in the near future. Reduction of visual clutter within the terminal will require stronger tenant design guidelines by airport operators. Restrictions need to be placed on airlines and concessionaires so as to not overwhelm passengers with promotional signage or display areas. Lighting levels, glare and appropriate amounts of contrast need to be analyzed during design to determine adverse effects to passengers and staff. Integration of comprehensive wayfinding signage schemes need to complement and reinforce the terminal design vocabulary to create a synergy of information rather than a competition. Use of thoughtfully placed, highly visible, back-lit signage can be used to enhance the passenger's journey and ease anxiety.

Much like the goal to reduce visual clutter with the airport terminal, sound and volume levels need to be taken into consideration to create a more peaceful, stress-free travel experience. As more of the traveling public experience hearing loss, the design of the terminal needs to make appropriate accommodations. The first area in need of improvement is better control of announcement zones within the terminal. The mix of terminal-wide security announcements and flight-specific announcements needs to be fine-tuned to reduce overlap and to prevent "bleed-over" to other spaces that do not need the same information. Auditory announcements could be reduced and supplemented by a series of auxiliary visual display monitors that list gate change or specific flight status updates, thereby allowing passengers to see the updates rather than hear them. Targeted announcements are still needed for passengers with vision impairments, but this solution could reduce the frequency of audio announcements in the terminal. Better smartphone integration or display pop-ups over terminal wifi systems announcing airline flight updates or other important information would also reduce the amount of audible communication and "noise."

ABOUT THE AUTHOR

Michael Steiner

As a registered architect at Corgan, Michael Steiner is involved with projects from early schematic design through construction administration as well as project close-out documentation and post-occupancy assessments. His experience with a variety of project types ranges from ground-up terminals and building additions to focused renovations within existing facilities. Mike understands that the successful completion of a project is a team effort and maintains a solutions-based approach when coordinating with design and construction teams.



Ultimately, we're trying to build spaces that people enjoy and can thrive in; spaces that will stand the test of time. For us, this research has been extremely helpful in understanding the challenges the aging face in travel through airports. We've already begun to apply our findings to current projects and look forward to subsequent studies informing future designs.



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Get to Know Rosemary Vassiliadis,

Director of Aviation, Clark County

Las Vegas' McCarran International Airport handled 45.4 million passengers in 2015, the third-busiest year in its history. Eighty percent of the airport's traffic is made up of origin and destination travelers.

Most of the 30 airlines that served McCarran in 2015 saw their passenger numbers rise, led by low-cost carriers Frontier and Spirit. The airport generated \$28.4 billion in total economic output in 2015 and created more than 200,000 jobs and \$8 billion in labor income. When it comes to air service, much of it has come from markets outside of the U.S., including nonstop flights from England, Panama, Korea, Sweden and Denmark.

Overseeing all of this is Rosemary Vassiliadis, director of Aviation for Nevada's Clark County. Her oversight also includes four general aviation facilities: North Las Vegas Airport, Henderson Executive Airport, Jean Sport Aviation Center and Overton/Perkins Field. *Airport Business* magazine spoke to her about how her airport is handling increased capacity, its growth in international carriers, getting flights for visitors and convention attendees and upgrading the airport's passenger experience.

AIRPORT BUSINESS: YOU OPENED TERMINAL 3 IN 2012. WHAT OTHER CHANGES HAVE HAPPENED AT THE AIRPORT SINCE THEN?

Rosemary Vassiliadis: With the opening of Terminal 3, we relocated all of our international operations there. Then we split our domestic operations for the first time ever at this airport because we now have two-unit terminals, each with their own ticketing, parking, curbs and gates. We also installed a new checkpoint baggage system.

Terminal 3 gave us an opportunity to have more room. In the hold rooms, you'll see they are all larger because the airplanes have changed. Airplanes are getting bigger, and they're putting more seats in them.

Looking at the behaviors of our airlines, we more than tripled our capacity with Terminal 3, and it gave us more capacity for wide body jets and swing gates as needed. From 2009 until today, our international service has grown almost 70

percent. It's quite a story, because it started with the second daily Virgin [Atlantic] flight, along with the entrance of carriers such as Norwegian and Copa. Economic times will always fluctuate, but it's been phenomenal that our international service was sustained during the recession and the recovery. And had it not been for Terminal 3, we would not have been able to accommodate them in a reasonable and efficient manner.

AB: WHAT ABOUT DOMESTIC GROWTH AT THE AIRPORT?

RV: Southwest Airlines is still our major carrier, at about 40 percent. We have around 225 flights a day. Southwest is adding more long-haul service than they ever had before. Spirit Airlines



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The airport generated \$28.4 billion in total economic output in 2015 and created more than 200,000 jobs and \$8 billion in labor income.

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discovered us awhile ago, but the last two years they have seen phenomenal growth. That gets Allegiant Air and the others to notice. We have the demand.

The city has more than 150,000 hotel rooms, and they're going to fill them. Daily average room rates have gone up and that's nothing but a benefit for the local economy. People are still coming despite room rates going up, but they're now looking at low-cost carriers to get here.

We also see it with business travelers. JetBlue announced they're going to bring in Mint, their premium product. So it's not all low-yield passengers coming in. The mantra of the business people here is that they want to be on time. But now, they also want some amenities on their long-haul flights.

AB: HOW IMPORTANT HAS CONVENTION GROWTH BEEN FOR THE AIRPORT?

RV: Since 2012, the town's conventions are back. I don't know how many records we broke already this year. The Consumer Electronics Show broke a record, along with a number of others since January. Our statistics tell us that 70 percent of conventioners arrive by air. That's a very important statistic that has helped our growth. Our legacy airlines are also peaking. We'll always be a beneficiary because we have the demand for domestic service.

AB: AIRPORTS ACROSS THE COUNTRY HAVE BEEN CHALLENGED WITH GROWING TRANSPORTATION SECURITY ADMINISTRATION

CHECKPOINT LINES. HOW HAS MCCARRAN HANDLED THIS ISSUE?

RV: We take this very seriously. My staff meets with the TSA on a weekly basis. We look at conventions, special events and whatever else may be happening, especially if it's a three-day weekend. We try very hard to staff for that because of the peaks and valleys that happen at our airport. We still have very high peak-time periods every day. We look at that and we know what seats are coming in each hour. We know what our average load factor is and we manage it all with TSA.

AB: HOW DO YOU KEEP YOUR FINGER ON THE PULSE OF WHAT TRAVELERS WANT IN YOUR AIRPORT?

RV: We take our surveys very seriously, and we

scour them to make sure that we're accommodating the passenger with what they need and want. We also look at demographics, especially for our international travelers. For example, Asia has a whole mindset of its own. There's a lot of impulse buying and so it is displayed in our terminals.

It's also the right type of eatery. British passengers are one of our biggest travel groups and they love hamburgers. When we opened up Terminal Three, we had one hamburger place — Carl's Junior. But our survey showed that the Brits love hamburgers, so we now have a sit-down hamburger place.

We also sit with our concessionaires and talk about what passengers need. We want a good mix of grab-and-go, fast food, quick casual and full casual.

The behavior of the domestic passenger here in Las Vegas is that they don't arrive that early. But once they get here, there's a lot of

impulse buying, because they need to bring something home and get something post-security that they bring onto the plane in a sack. But our international passengers are quite the opposite. They come here very early, so we offer them fuller menu options to accommodate that.

AB: WHAT OTHER FACILITY CHANGES ARE IN THE PIPELINE?

RV: The biggest thing for the airlines and all of our tenants is our facilities. So if you take a walk, you'll see that there's a huge project going on in Terminal One. It's much more than a facelift. It truly is an improvement on every part of it. We were approved by TSA to upgrade and update our inline EDS baggage processing system. But we're improving not only the baggage system, we're improving the conveyor system, we're improving the skycap system and the counter system.

We're adding a more colorful terrazzo tile

floor that looks better and wears better. We're upgrading all the restrooms and we're also adding restrooms, which will be a benefit for everybody.

AB: WHAT ARE YOUR GOALS FOR THE AIRPORT FOR THE REST OF 2016?

RV: We want to offer the best customer experience and a seamless operation. Hospitality is something this town is known for, and we want it to start the second that aircraft door is opened. We know that it doesn't matter to passengers whether it's Custom and Border Protection, the TSA or us. We represent this destination. People choose to come to this destination and we want that Las Vegas experience and that hospitality that we're known for to start and end here.



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The Digital Directory Experience + Airport Retail — Enabling Engagement

Using a digital directory can move service away from traditional wayfinding into a new arena of better customer service.

Wayfinding, be it traditional or digital, is so 2010. We get it. Show us how to get from point A to point B via mobile device in literally five text messages. Tell me where the bathrooms are and yes, perhaps I may even like to send those directions to my mobile as well – although our recent work in this space actually tells us something quite different.

Initially, digital wayfinding was a one-to-one interactive experience. Users searched a destination and were provided directions to get there. But the technological possibilities have evolved so that customer interaction doesn't need to stop once a user leaves the display because there are ways to deepen customer engagement.

We love wayfinding. And we'll continue to implement wayfinding applications for our clients when it is the strategically appropriate experience. We recommend these strategies when we're on panels and promote them to enhance the customer journey. But in certain circumstances, we've come to feel that Point A to Point B wayfinding experiences can be a bit utilitarian, and leave a great opportunity to deepen the customer experience on the table.

The convenience of traveling by air is unde-

niable. Within a few hours, you can have breakfast in New York City and dinner in Milan. But that experience comes with a cost — anxiety and stress caused by hassle and inconvenience. But as the global movement of being connected is front and center, what at times can be a “utilitarian” transportation hub — the terminal — needs to implement a true strategy to enhance the traveling experience.

According to a Walker study, by the year 2020, customer experience will overtake price

and product as the key brand differentiator, projecting that 86 percent of people will pay more for an enhanced customer experience. This includes the travel sector, focused on the airport terminal as a top location.



BY THE YEAR
2020
CUSTOMER EXPERIENCE
WILL OVERTAKE
PRICE AND PRODUCT.

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We see the same statistics over and over. More brands and organizations are talking about customer experience and the importance it plays. By 2018, more than 50 percent of organizations will redirect their investments to customer experience innovation. This means more emphasis will be placed on uniting all touch points into a single, fluid experience. Traditional wayfinding is not the “single, fluid experience” we are all seeking. But, digital wayfinding helps you locate certain items within a space and directs you to them, while giving you a view of other areas that may be of relevance.

Enter the digital directory experience, the next logical step in bridging the physical and digital environments. By providing input

based on environment, available data, user preference and influences from previous sessions, digital directories not only help users to their destination, but they also go beyond by providing insight into the space, serving up complimentary product recommendations and offering personalized assistance.

Inside the terminal, the digital directory experience should be efficient, elegant and on-brand message, helping customers find what they are looking for while educating them in an unobtrusive manner. The goal here is to discover, inspire and assist the traveler. A key distinction for the digital directory experience is that the customer journey isn't linear — why should the digital experience be? Shopping and discovery are about the journey, and the digital directory experience gives us the opportunity to build brand equity along the way.

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Digital directories inside a terminal can be catalysts that define the customer experience. At their best, they provide an opportunity to shape customers' discovery and information gathering processes, informing the way they experience the terminal environment, including retail and restaurant engagement.

With the digital directory experience, we can integrate intelligent applications that can become more personalized and easily tailored to user preferences. The strategy offers the ability to make suggestions based on preference, seasonality, time in terminal and other factors. Intelligent, dynamic search and personalized recommendations have proven benefits to not only brands looking to upsell and drive customers to their space, but it creates efficiencies and value for the customers themselves. In creating a digital directory experience, design plays an extremely important role. Leveraging an intelligent merchandising API, the directory is less a sales tool and more a tool that aids and assists customers through their journey. The true differentiator for the digital directory experience is essentially enabling an artificial

Inside the terminal, the digital directory experience should be efficient, elegant and on-brand message, helping customers find what they are looking for while educating them in an unobtrusive manner.

intelligence-based engine to drive personalized recommendations for individual customers. Within a brand's digital strategy, it is about personalization, but sometimes it is also about keeping pace with competitors. Travelers don't necessarily know what they want, so it's incumbent upon retailers and merchants to help lead them in a way that makes it appear they are discovering something for themselves. Every journey needs a starting point — the digital directory is designed to be the physical point that meets digital initiation.

Traditionally, wayfinding has been a hyper-focused effort — used to get a user to a specific destination. Kevin McKenzie, Director of Digital at Westfield was quoted recently saying, "Traditional wayfinding really just helps you get from Point A to Point B. The way we think about wayfinding is really more than that. It's discovery. Most people, we believe, when they go to a mall, they pretty much know where they want to go, but they're really not certain what's happening all around them, and may not be aware of product trends, offers, deals or even events that we or our retail partners are hosting." From a strategic point of view, the main difference between digital wayfinding and a directory experience comes down to function. Wayfinding has a functional end, and can be a sterile, transactional experience. Digital directories also serve the wayfinding end, but the digital directory experience elevates the customer interaction to include brand messaging, creating opportunities to further engage customers in an elegant, brand-right experience and opens up a new channel for expression, engagement and capture.

So how do we implement engagement and

close the communication loop with the customer? In our experience, we've identified three key factors you should consider.

1. Choose The Right Partners: Choosing the right firm, not only to ideate and help visualize the experience, but one who also understands the nuances involved in executing which goals should be a top-priority. While I hope you have the opportunity to see innovative design and UX work that will spark your interest, when it comes to time-tested strategies and future-perfect deployments, successful hands-on experience with relevant deployments ensures a deeper understanding of your challenges. **2. Be Realistic:** Begin with a plan that sets goals and metrics that are achievable and integral to your business goals. Big data can be overwhelming when you don't know what you're looking for. Find what works for your organization, implement it and plan to adapt accordingly. **3. Understanding:** This is a long-term strategy, not a short-term tactic. The investment that is made is to not only heighten the customer experience today, but also to begin to lay a foundation for future customer relationships.

The success we have seen thus far with the digital directories should be very inspiring for both brands and retailers within the airport environment. No longer seen as just a "terminal", the new travel experience is all about that, the experience, and as an agency, we are continuing to push it forward with technology, creativity and a strategic mindset.



OpenEye Global is a member of the Digital Signage Federation, the only independent, not-for-profit trade organization serving the digital signage industry. The DSF supports and promotes the common business interests of worldwide digital signage, interactive technologies and digital out-of-home network industries. To learn more, go to www.digitalsignagefederation.org

ABOUT THE AUTHOR

Steven Picanza

Picanza is a marketing and brand strategist with a core purpose centered on connecting people, products and organizations with their core audience. With 10+ years experience, it is his "glass is always full" type of attitude coupled with his sheer candor and entrepreneurial spirit that drives him to bring authenticity back into the industry, serve as a catalyst for progress and inspire the next generation to do the same.

Best Practices in FBO Management:



Alec Maguire/FBO Partners

Ground Transportation

Prior to 9/11, I had the privilege of working at Signature Flight Support at Washington National Airport (DCA) and learned just how secure an FBO's ramp could be; especially when it came to ground transportation providers. In those days, DCA had unfettered access by general aviation, and was one of the busiest FBOs in the country. To be sure, an average day could see 100 operations of business and general aviation aircraft.

Despite this, DCA was one of the most secure airports in the country at the time, and still is today. Virtually no customers of the FBO had airside vehicular access privileges via a ground transportation provider, such as a taxi company, rental car or limousine service. Only one or two limousine companies were permitted on the FBO's ramp, and each of their drivers had to be "sponsored" by the FBO, and undergo the same background checks and driver training provided by the governing airport authority. Certificates of additionally insured status were required and verified annually, and those select limousine drivers received recurrent training. Interestingly, the only ground transportation-related accident seen at the FBO was one beyond its control: A Secret Service motorcade clipped the wing of a foreign dignitary aircraft during the pickup

sequence. Evidently, Secret Service's ramp side clearance trumped the airport's driver training regulations, and the driver was unfamiliar with driving near aircraft.

In any event, ground transportation access at DCA stands in stark contrast to a great many airports around the country today, which though largely secure, remain largely unregulated. At many non-towered airports, it's practically the Wild West, and airplanes share taxiways with personal cars of based customers who find it more convenient to use a taxiway at times. While the restrictive "lock down" of DCA simply isn't appropriate for the vehicle gates at most FBOs, neither is the Wild West model where anyone who wants access has *carte blanche*. There's an appropriate middle ground, and it requires consideration of two factors: Risk mitigation and revenue opportunity.

On risk mitigation, the Secret Service accident mentioned earlier is emblematic of drivers unfamiliar with airside operations at an FBO. Today, this situation is further exacerbated by rampant cell phone use while driving. Simply put, drivers unfamiliar with operating a vehicle airside plus cell phone usage equals an accident waiting to happen on an FBO's ramp. What steps then can an FBO take to mitigate risk, while providing a high-level of customer service?

First, FBOs are wise — and have the right — to set limits on access. An FBO is not a public airport terminal. It is a private facility available to aircraft operators and their guests. It operates on a leasehold paid for by the FBO, not Passenger Facility Charges (PFCs) or other funding mechanisms. Access by third-parties to an FBO's ramp should be restricted to those with a demonstrated need for access, and who meet the FBO's security and insurance requirements. One litmus test to apply is easy: Does your FBO have a physical contract or insurance certificate — or both — with the entity requesting ramp access?

For onsite rental car companies, that answer is likely yes. For limousine transportation companies, that answer may take the form of a maybe. Yet, for most, that litmus test rules out taxi companies or Uber drivers more or less immediately, and it should. There is no harm whatsoever in asking a passenger who has requested a taxi to walk from the aircraft

to the FBO, and out the front door of the FBO to step into the waiting cab. Conversely, there is significant risk in allowing a taxi cab driver on an FBO's ramp, even if under escort. Aside from a complete lack of familiarity in the FBO environment, taxi drivers have a well-earned reputation of failing to obey posted speed limits. And, if an FBO has a relationship with a limousine company that secured the appropriate insurance for airside operations, what incentive do they have to maintain that coverage when the FBO allows pretty much anyone who can fog a mirror the ability to drive ramp side? It's fair to offer a certain level of competitive protectionism by requiring a level playing field. That action may take the form of requiring certificates of insurance from ground transportation vendors requesting ramp side access.

In terms of communication, what steps has your FBO taken to educate vendors as to the basic "rules of the road" prior to granting ramp access? While requiring a driver training course of each driver might seem good in theory, it's seldom a realistic goal. One suggestion is requiring limousine drivers to check in at the FBO's front desk prior to accessing the ramp. The interaction offers a venue for a simple verbal briefing, and may prevent an accident. Yet, that opportunity may not always be available. In such a case, signage is a simple yet effective risk mitigation tool. I was impressed recently to see signage on the vehicle access gate of an FBO outlining several basic tenets of ramp side driving: "Aircraft have the right of way, do not drive between wingtips," and other helpful tips on the sign alerted drivers. A visual diagram showing typical aircraft parking configurations added to the detail.

FBOs may also wish to consider that ramp side access is a privilege, not a right, to third-party ground transportation companies. To that end, establishing a relationship with a local sedan or chauffeured transportation service can pay dividends, both literally and figuratively. In the literal sense, some FBOs may wish to only allow access to approved transportation companies meeting their insurance or other requirements, and charge an access or commission fee via a concession contract. If a preferred provider is receiving FBO leasehold access without the burden of paying the monthly leasehold fee the FBO does,

For their safety and that of their customers, FBOs are wise to set rules for ramp side access, and should consider relationships, contracts and insurance certificates when selecting or recommending ground transportation providers.

it is entirely appropriate to enact a concession agreement. Finally, in the figurative sense, dividends are realized when an FBO's preferred transportation provider is able to jump in and save the day on short notice, thereby circumventing a potential customer service issue.

Though cliché, an FBO is only as good as the vendors with whom it partners. Even if not providing a service directly, FBOs often bear some responsibility for the service failures of its chosen vendors, such as ground transportation companies. For their safety and that of their customers, FBOs are wise to set rules for ramp side access, and should consider relationships, contracts and insurance certificates when selecting or recommending ground transportation providers. After all, an FBO's reach extends far beyond the airport fence line.



ABOUT THE AUTHOR

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Douglas Wilson is the president and founder of FBO Partners LLC, an aviation consulting firm that provides asset management of hangar facilities for FBOs, and offers specialized consulting in due diligence, contract life-cycle management and other FBO disciplines.

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AIRPORT SERVICES – Don't Forget the Customer Service Aspect

Planning for customer service means building more revenues for the future.

Thousands of people move through airports each day. Some only have time to hit up the burger chain or grab a magazine. But many passengers are looking for services that make the overall travel experience easier and more convenient – services like shuttles, car washes, on-site pet boarding or drop-off dry-cleaning.

So why the sudden rush to add services? One reason is a lack of physical space for growth — with land at a premium and new retailers hard to attract, improvements in customer service are soon estimated to account for more revenue potential than additional retail space. For flyers, this means making the end-to-end experience better.

GO THE EXTRA MILE

With an explosion of services comes an increased need for service providers to manage customer expectations and provide premium support. It's

especially important to have dedicated, customer-service teams and to tap into the latest tools for support, such as callback, click-to-call and chat. Consider this scenario: Before an upcoming flight, you call the airport's 1-800 line to inquire about the valet and car wash prices, but are placed on hold. In which cases, you are more likely to hang up and go get your car washed elsewhere.

What if instead of being placed immediately on hold, you're given the exact wait time and the option of staying on hold or being called back — either as soon as the next agent is available or at a time more convenient for you.

When it comes to customer service, waiting on hold is the No. 1 customer frustration. According to customer experience research by Accenture, 71 percent of customers view valuing their time as the most important component of customer service.

With callback, customer effort is decreased and positive perception is increased. Whether a customer chooses to receive a callback as soon as possible or at a future time, they are immediately connected with the right representative to solve the issue at hand — saving both the customer's and the agent's time.

The same results are true for digital channels. Simply allowing a customer to choose a callback time via a website or mobile app can give customers back a sense of power and satisfaction.

GIVE YOUR AGENTS MORE RUNWAY

As airports seek to add more services, empowering agents to expertly handle every interaction will be critical for success. Omnichannel callback enables the customer to request a voice callback from the channel or device of their choice.

When a customer schedules a callback, information collected includes customer data, the channels they have used and information requested. This data helps align customer context with agent availability and skills. In other words, instead of handling a call blind, agents know who the customer is and the reason for their call.

Empowered with information to provide a relevant response, agents are better able to create a positive experience for the customer, and improve the reputation of the service brand.

TAKE TO THE SKIES

When it comes to offering enhanced services, airports need to deliver on customer expectations and improve the overall bottom line for the airport, develop top-notch support teams and leverage the best tools for customer satisfaction.



ABOUT THE AUTHOR

Jaime Bailey

Bailey serves as senior director of marketing at Virtual Hold Technology. With more than 16 years of experience, she stewards a team focused on understanding the customer experience, applying new marketing techniques and maximizing ROI. She can be reached at: jbailey@virtualhold.com.



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FINAL ANALYSIS



MIA BUCHIGNANI joined Faithful+Gould as a lead project manager

PATRICK HECK named DEN's new chief commercial officer-executive vice president for global development



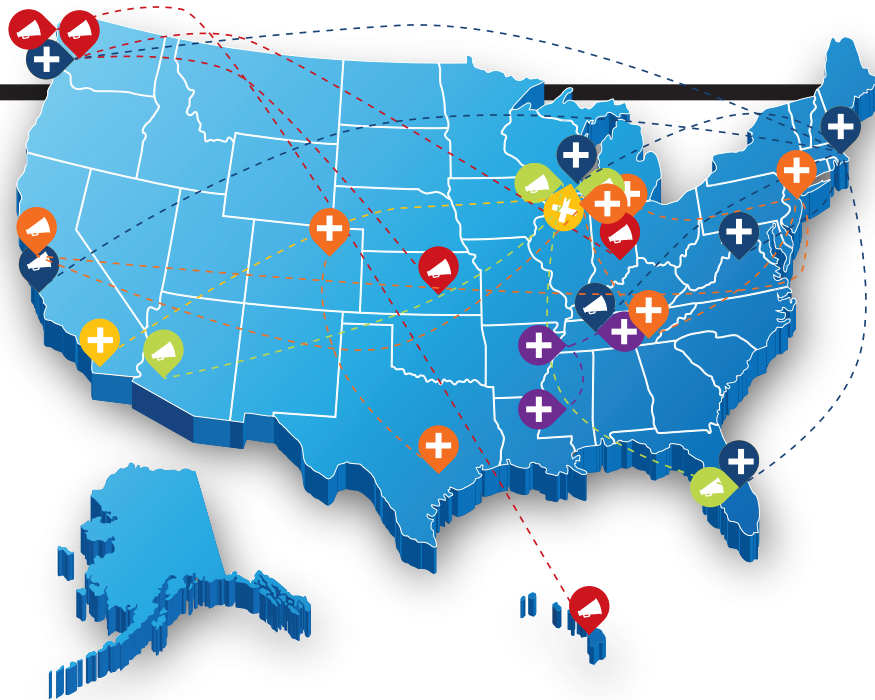
J. BRIAN O'NEILL, A.A.E. was named Phoenix-Mesa Gateway Airport Authority executive director/CEO.

RALPH MICHIELLI was promoted to chief operating officer of ExcelAire



MATT GRANLUND, AIA joined HNTB Corporation as senior project architect. He is based in the firm's Orlando, Fla., office.

Robert Olislagers, A.A.E., executive director of Centennial Airport, received the American Association of Airport Executives' Distinguished Service Award, which is presented to airport executives in honor of an exemplary career and contributions to the airport industry.



Flight Tracker

Alaska Airlines

- SEA — IND announced
- SEA — ICT announced
- BLI — KOA announced

Delta Air Lines

- BOS — SFO announced
- BOS — BNA announced
- BOS — SEA expanded
- BOS — MKE expanded
- BOS — MCO expanded
- BOS — LEX expanded

Frontier Airlines

- MKE — PHX announced
- MSN — MCO announced

Southern Airways

- MEM — BNA added
- MEM — JAN added

Southwest Airlines

- MKE — SAN added

United

- FWA — EWR added
- DRO — DEN expanded
- CHA — ORD added
- CHA — EWR added
- SJC — ORD announced
- SJC — EWR announced

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SYNERGY | sinərjē | noun | The interaction of elements that when combined produce a total effect greater than the sum of the individual elements, contributions, etc. From Greek sunergia meaning 'cooperation' and sunergos, meaning 'working together.'

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