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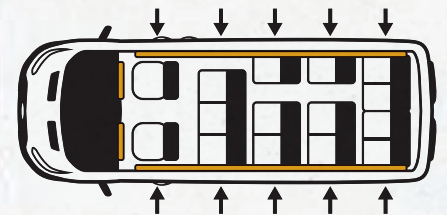
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The 2015 Transit Wagon with the high roof has a **CENTER AISLE THAT'S 6'5" HIGH!**

††Medium roof shown.



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INSIDETHEFENCE

Ronnie L. Garrett
Editor



What'cha Going to Do?

A few facts: Passenger load factors are averaging 90 to 95 percent. That's about 35 to 40 percent more than they were when most airport facilities were designed and built.

Aircraft are larger and gate turns more frequent. Thirty years ago, a gate averaged four to five turns a day. Those same gates may handle 10 flights today.

Facilities are aging; some of today's airport infrastructure is more than 50 years old.

At the same time, passenger demand for new technologies that streamline the process to make it more efficient and for better concessions/retail options is on the rise.

Airports Council International-North America estimates airport improvement projects, from parking facilities to airport hangars and commercial space in terminal buildings, will cost approximately \$72.5 billion over the next four years.

The reality is that airports need facility updates. They need to add new passenger amenities. And they need to incorporate technology to ease the travel process.

The challenge is how to pay for it. According to the Government Accountability Office, airports use 68 percent of PFC revenue—a fee that hasn't been adjusted for inflation in 15 years—to fund needed landside improvements and pay interest charges on debt.

The good news is that the FAA has proposed raising the federal cap on the PFC from \$4.50 per enplaned passenger to \$8. But at the same time, the FAA is proposing reducing the overall amount of grants it makes to airports under the Airport Improvement Program

(AIP)—going from \$3.35 billion in 2015 to \$2.9 billion in 2016. How those numbers shake out remains to be seen.

So what'cha going to do? This seems to be the \$72.5 billion question. "Find Spaces" on Page 10 examines all of these issues, and offers sage advice from airport

ACI-NA estimates
airport improvement projects will
cost approximately \$72.5 billion
over the next four years.

architects and consultants on where to cost-effectively find and create space within the terminal, what passengers are looking for and how to pay for it.

When it comes to finding space in cramped facilities or building new or renovating an existing terminal, "you have to think outside the box," says Mark Lobel, lead concessions designer for Corgan Associates. And he's right, in today's world space and funding to update or build new may not come from traditional places.

Consider what Wichita has done. Wichita Dwight D. Eisenhower National Airport just built a new terminal from the ground up. This airport will pay off the general obligation bonds issued by the city for the project with PFC funds, rental car and parking funds, pay-as-you-go airport system revenues, surplus cash, and concessions and retail rents.

Wichita leadership got creative and got the project done. What will you do to accomplish the same?



CHARLOTTE DOUGLAS KICKS OFF \$2.5 BILLION CONSTRUCTION PROGRAM

Immediately after completing an eight-year construction project, Charlotte Douglas International Airport got right back on the horse. This month, the airport kicked off a 10-year, \$2.5 billion construction program that will include an expansion of the terminal lobby and concourse A, as well as the addition of a new runway and new roads. Construction will begin this summer.

KaiserAir Oakland FBO Now Available as DCA Gateway Location



KaiserAir announces its KaiserAir Oakland (OAK) FBO is now available for DCA gateway access to qualified aircraft operators. Created by the Department of Homeland Security in wake of September 11, the DCA Access Standard Security Program (DASSP) allows business and corporate aircraft operators that have met the program requirements to use Ronald Reagan Washington National Airport (DCA). KaiserAir is one of only a handful of independent FBOs in California to receive this qualification from the TSA, who administrates the program.

Otto Wright, general manager for KaiserAir Oakland is pleased. "The TSA has been great to work during the lengthy application and vetting process," he says. "As an operator of corporate aircraft ourselves, we understand the unique challenges presented by DCA operations. This is an exciting development as it will allow DASSP qualified operators to depart directly from KaiserAir Oakland."

Wright notes the Oakland Airport has long been a preferred airport from which to operate out of the San Francisco Bay Area due to its milder weather, reduced ground delays and proximity to the City and Silicon Valley. By offering access directly to the heart of Washington, D.C., from the KaiserAir FBO, aircraft operators may benefit from a lower cost of operation than from either San Francisco, or San Jose Airports.

An area of KaiserAir's Oakland facility will be designated sterile for DCA flights, allowing the required security protocols to be performed in complete privacy. The KaiserAir facility is available immediately for DCA Access flights and special arrangements may be made in advance to ensure proper slot requests and passenger confidentiality. KaiserAir staff is also available to answer questions regarding the program and assist with arrangements.

Game Changing Training System On Duty At O'Hare

Oshkosh Airport Products Group LLC has its new Oshkosh Striker Simulator virtual reality training system on duty at Chicago O'Hare International Airport. The Striker Simulator system is engineered to depict an array of training scenarios for aircraft rescue and fire fighting (ARFF) organizations.

As a "green solution" with zero environmental impact, the Striker Simulator is engineered to depict a variety of emergency situations and scenarios. The system incorporates video footage and illustrated environments of Striker vehicles in action—with views from both inside and outside of the cab and a full audio track. The system depicts different environmental and weather conditions such as rain, snow, fog, night and bright daylight. It can accurately depict the delivery of dry chemical, foam, water and even Halon.

The incident commander has total flexibility to custom design training scenarios. The Striker Simulator system includes a Scenario Toolbox that enables incident commanders to easily develop highly realistic and varied emergency situations from an easy-to-use drop-down menu.



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Amadeus IT Holding S.A ...

Reports adjusted profit for the period grew 9.7 percent in the first quarter.

American Airlines ...

Plans this summer to meld key computer systems from the two carriers that combined in its merger 17 months ago.

American Association of Airport Executives ...

Announces U.S. Department of Transportation Secretary Anthony Foxx will give the keynote address to attendees of its annual conference, June 7-10, in Philadelphia.

Allegheny County Airport Authority ...

Selects AirIT's EASE Virtualized Shared Use Platform for Pittsburgh International Airport.

Baltimore/Washington International Thurgood Marshall Airport ...

Opens Einstein Bros. Bagels on concourse C.

Bi-National Gateway Terminal ...

Will construct a cargo handling facility on a 49-acre site on the edge of one of Lambert St. Louis International Airport's four runways.

Branson Airport ...

Announces the return of Branson AirExpress

with service to Chicago Midway International Airport and Austin International Airport.

Charlotte Douglas International Airport ...

Kicks off a 10-year, \$2.5 billion program that will change the roadway passengers use, the terminal and the airfield itself.

Cleveland Hopkins International Airport ...

Begins first phase of a project to modernize and upgrade the terminal building.

Dallas/Fort Worth International Airport ...

Moves employees into new headquarters building.

Dubai Airports ...

Begins trialing technology that allows passengers to print out bag tags in a taxi and hand the luggage to security as they arrive.

Emerson Aviation ...

Becomes the first CAA Preferred FBO in New Hampshire.

Expedia.com ...

Releases the Expedia app for Apple Watch, allowing travelers to receive and access

trip information.

FAA ...

Plans to study airport noise across the United States to determine whether policymakers need to change the way noise is measured from passing aircraft.

Guntersville Municipal Airport ...

Announces airport expansion is nearly complete, and sets a June ribbon cutting date.

Hartsfield-Jackson International Airport ...

Announces new law could bring ridesharing to the airport.

HMSHost ...

Opens Whisky River restaurant at Charlotte Douglas International Airport's E concourse.

JFKIAT ...

Took home the Richard A. Griesbach Award of Excellence at the 2015 ACI-NA Airport Concessions Conference.

LaGuardia Airport ...

Had the worst on-time performance record of any major U.S. airport for the month of March.

Los Angeles International Airport ...

Completes \$423.8 million replacement Central Utility Plant.

Parsons Brinckerhoff ...

Will provide engineering and construction-related services for a new parking garage and an expansion of the terminal B parking garage at Logan International Airport.

Pentastar Aviation ...

Voted in the top percentile of FBOs by readers of Aviation International News (AIN) and Professional Pilot.

Philadelphia International Airport ...

Collaborates with Minute Suites to provide Mothers' Nursing Station, private rooms for breastfeeding and expressing milk.

Phillips 66 Aviation ...

Names Kent Holman as senior supply coordinator for General Aviation Marketing.

Pittsburgh International Airport ...

Hires artist for 69,000-square-foot floor of the Airside Terminal, which will be transformed into a skyscape composed of terrazzo tiles.

New Post For Former Chicago Department of Aviation Commissioner



Former Chicago Department of Aviation Commissioner Rosemarie Andolino has been named CEO of British airport owner MAG's new North American division.

Andolino will oversee a New York-based team that will develop and operate terminal and retail solutions, passenger lounges and parking facilities in North American airports.

U.K.-based Manchester Airports Group owns and operates four UK airports: Manchester, London Stansted, East Midlands and Bournemouth.

"The combination of Rosemarie's experience of major U.S. aviation projects and MAG's existing expertise drawn from its running of four U.K. airports, makes me confident that we will have a unique offering for the North American market," Charlie Cornish, MAG chief executive, said in a press release.

Andolino, who most recently was vice president of aviation in the Chicago office of Jacobs Engineering Group, oversaw the \$10 billion airfield expansion project at O'Hare International Airport and the \$26 million remodeling of O'Hare's international terminal, which was unveiled last year.

The mayor's office announced in June that Andolino was leaving her \$187,000-a-year city job for the private sector.

INDUSTRY NEWS

Port Columbus International Airport ...

Begins preliminary plan to replace the airport's terminal.

Region of Waterloo International Airport ...

Welcomes Chartright Air Group to its Aviation Business Park.

San Francisco International Airport ...

Adds 40 new Automated Passport Control kiosks.

Searidge Technologies ...

Enters a strategic partnership with Ottawa International Airport Authority to create a technologically advanced integrated airport operations center at Ottawa

Macdonald-Cartier International Airport.

Southwest Airlines ...

Announces plans to add 94 ramp agents at Denver International Airport.

Superior AvConsulting Services ...

Names Ana C. Fontes as executive vice president and general manager.

Tampa International Airport ...

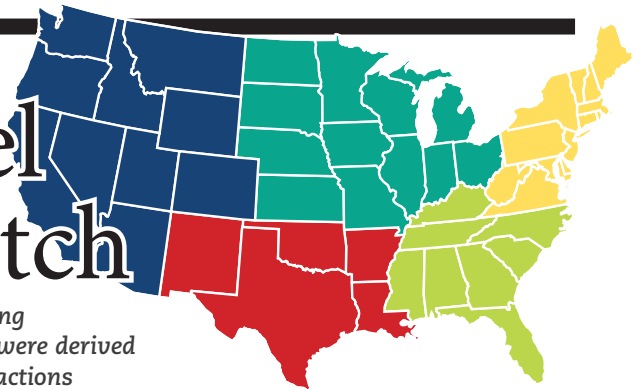
Unveils virtual reality tour of airport expansion.

T.F. Green Airport ...

Moves to SITA's Cloud technology to attract international airlines to Rhode Island.

Fuel Watch

The following fuel prices were derived from transactions completed with the AVCARD credit card during February. Not all operations sell both jet-A and Avgas. The figures for jet fuel prices will be more representative than those for Avgas, due to the higher number of transactions recorded. Prices reflect all taxes and discounts. Data is supplied from AVCARD in consolidated format; individual transactions are not disclosed.



West Coast

Jet-A: \$4.06
Avgas: \$5.31

South Central

Jet-A: \$2.33
Avgas: \$4.63

Southeast

Jet-A: \$3.60
Avgas: \$4.97

North Central

Jet-A: \$3.96
Avgas: \$5.13

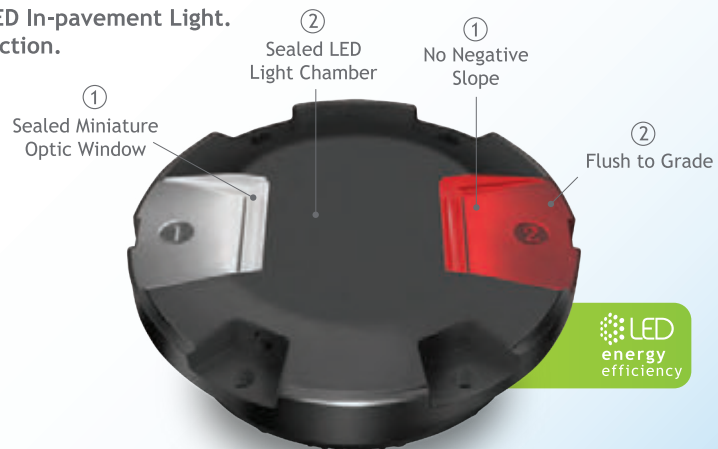
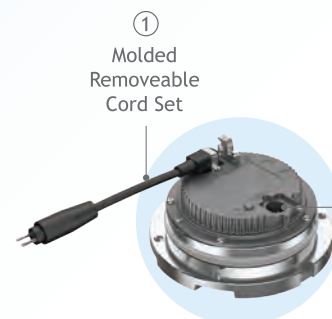
Northeast

Jet-A: \$3.80
Avgas: \$5.26

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Finding spaces

With space at a premium in today's airports, what can be done to build in the concessions/retail operations passengers crave and generate the non-aeronautical revenue airports need?

Tom Rossbach of HNTB has been designing airport terminals for 35 years—and over that time he's seen a lot of changes. A big one is higher passenger load factors, an issue that's significantly—and negatively—impacting today's aging airport terminals.

“When I started in this business, the load factor we used for the number of seats occupied in the aircraft was between 55 and 65 percent,” says HNTB’s Director of Aviation Architecture. “Today, the load factor averages 90 to 95 percent, and it presents a significant challenge, especially in older terminals that were never designed to handle that many people.”

Matters get further complicated when one considers aircraft are larger and gate turns are more frequent. According to Rossbach, 30 years ago a gate averaged four to five turns a day. Those same gates may handle 10 flights today.

“All of these things pump more passengers into a terminal that was never designed to handle that many people,” he says. “It’s not just the departure hold rooms either. It’s everything in the concourse, such as restrooms and even the width of the concourse was never designed for that many people.”

The impact of these changes can be best seen at LaGuardia International Airport, says Rossbach, who notes everything is under-sized at this 50+ year old facility. The hold rooms are too small, the concessions and retail offerings insufficient, the concourse too narrow, and the restroom facilities too few. “Even the HVAC system was never designed to handle that many people,” he says.

Unfortunately, LaGuardia isn’t the only airport suffering from this affliction. Many airports with aging infrastructure also suffer the space crunch. And the result is often declining customer service for the passengers they serve. Rossbach explains, “There’s not enough seats in the hold rooms; sometimes there isn’t even enough places for people to stand. Queuing backs up and extends out of the hold room, which blocks people from going down the concourse.

Matt Dubbe, market leader of Architecture at Mead & Hunt Inc., laments that “crowding is such an issue that fire marshals are starting to take issue with it.”

Passengers are too. Customer service levels also drop in severely crowded terminals. “We use what we call Level of Service standards, and strive to hit at least Level C,

which is basic service—not the most ideal but still very good service,” says Rossbach. “Many older terminals are operating at Level D or F, which is a real issue.”

It is in this environment that airports strive to maximize non-aeronautical revenues. But adding passenger amenities also contributes to overcrowding. As airport concessions and retail outlets move post-security (70 percent of all concessions and retail offerings are now post-security) and incorporate café seating or free iPad stations, these new additions push into already crowded spaces. “The challenge with these areas is that they too are becoming overcrowded,” says Dubbe. “The unique retail concepts airports are adding actually push into the [hold room’s] seats.”

When things get crowded, passengers become stressed. Overcrowding negatively affects traveler stress, at every step of the process from parking to check-in to security and boarding, states Mark Lobel, lead concessions designer for Corgan Associates. “With passengers spending more time in the terminal, it’s great for concessions but very difficult for operations,” he says.

Gate hugging—the phenomenon where passengers stay in their seats until their aircraft arrives—also rears its head when seating space

is at a premium in the hold room, according to Dubbe. A passenger who is lucky enough to find a seat doesn’t want to leave it, and when it’s crowded, passengers are more likely to want to sit within eye-sight of their gate.

“There is a stress curve, and that stress curve starts in the parking lot and ends in the hold lounge,” Lobel says. “The more we can mitigate and offset that stress, the more likely passengers are to open their pocketbooks.”

LOCATION, LOCATION, LOCATION

“If you have the land to build a new terminal that’s not a bad way to go,” says Rossbach when asked what airports can do about this space crunch. But while it would be the easiest way to address the issue, many airports are landlocked rendering such a possibility little more than a pipedream. In fact, the United States has only seen three airports built from the ground up in the last 35 years.

But there are some solutions that can help alleviate overcrowding, while providing the amenities passengers want and allowing airports to maximize their non-aeronautical revenues.

“First and foremost, you have to maintain airport operations,” says Lobel. “You can’t forget

Passengers crave novelty retail stores like this candy store found at DFW.



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that the point of an airport is to get passengers from Point A to Point B. We can't interfere with that process."

Lobel recommends looking at residual space for concessions and retail opportunities. "There may be pockets of space that are not really programmable, but can be made available for retail and concessions," he says. "It's fairly easy to find these pockets, you just have to think outside the box."

Roszbach says the first thing they consider when looking for available space is the amount of available apron space. There must be enough aircraft parking and space to circulate aircraft behind it. "Sometimes we can push out a little bit into the apron area between gates and create more space," he says.

Another opportunity might be to construct a second-floor mezzanine, though Dubbe points out it can be difficult to get baggage-toting passengers to go to a second floor with their

bags. "But if there is enough space to put in an elevator or escalator, that helps get people up there," he says.

Often the terminal houses non-essential office space or storage rooms that can be easily moved to another area, or even off site. These areas also can produce pockets of space for concessions and retail build outs as can areas that once housed banks of pay phones.

In really tight spaces, kiosk-type vending or shallow wall front-type stores can offer up retail and concessions to travelers in the hold rooms. Sometimes kiosks interfere with passenger flow through the concourse, if it is particularly narrow, says Roszbach. However, passengers seem to like and use self-service kiosks, adds Lobel.

"Building on a smaller square footage is really convenient for the customer," says Brad Lenz, senior vice president of Hudson Group. "They are very convenient and quick. For the

"Today, the load factor averages 90 to 95 percent, and it presents a significant problem, especially in older terminals that were never designed to handle that many people."

TOM ROSSBACH, DIRECTOR OF AVIATION ARCHITECTURE, HNTB

retailer it's a less expensive build out than a larger store."

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if spaces are visible and inviting, product offerings fit the passenger makeup, and passengers can get to and from them with ease.

Uncertainty in the travel process mandates

that these spaces either be visible to hold rooms or include dynamic messaging designed to inform travelers of the time it will take to get to their gates. Dubbe says some airports are adding

video billboards to their marketplaces. These units display messages such as “Gate 1 Now Boarding” and other notifications travelers need.

Though signage is important, Rossbach states when designing an airport they try to make wayfinding intuitive so that travelers can readily find their way without signage. “The architecture and layout of the terminal should draw them to certain destinations,” he says.

CONCESSIONS/RETAIL TIPS

Once concessions/retail spaces are in place, there are a few things these businesses can do to draw the passengers in.

▶ **Be seen.** If you want passengers to stop and look at your store, you have to make the product visible. Mark Lobel, lead concessions designer for Corgan Associates, encourages business owners to employ the five-second rule. If it doesn’t grab a passenger’s attention in five seconds, chances are they are not going to stop. “You have got to move customers across the lease line, then deliver on the promise,” says Brad Lenz, senior vice president of Hudson Group. “The store needs to surprise and delight them, and give them a great experience through products and customer service.”

▶ **Good design.** A good design within the space elevates the perceived value of the merchandise. “Good design is good business,” says Lobel. “If you develop a good looking store front, it will entice customers to come in.”



Airports are putting quality over quantity into their retail and concessions offerings.

▶ **Bigger is not always better.** When traveling with bags in tow, passengers don’t always want to work

their way through a large store to get what they need. Sometimes a shallower retail store is just as good because they can get in and out quickly.

▶ **Get healthy.** As more of the population focuses on their health, it’s important for airports to move past the hotdogs and French fries to healthier food offerings that include fresh, locally sourced food.

▶ **Don’t forget the FIDS.** Passengers visiting retail or concessions outlets want to know where their flight is and when it begins to board. Putting a flight information display board in the area informs the traveler and removes some of the unease of travel.

▶ **Bags, bags, bags.** More travelers than ever are schlepping their bags through the airport to avoid paying baggage fees levied by the airlines. Retailers and concessionaires need to build room for these bags into the design of their stores. “If it’s too tight, people won’t venture back through the store because it’s too hard to navigate,” says Tom Rossbach, HNTB’s Director of Aviation Architecture.

▶ **Provide things the airlines don’t.** Sell sandwiches and drinks, bottles of water, blankets, pillows, socks, magazines and more. “Provide the creature comforts that airlines do not,” says Lenz.

“The more we can mitigate and offset that stress, the more likely passengers are to open their pocketbooks.”

MARK LOBEL, CONCESSIONS PROJECT MANAGER, CORGAN ASSOCIATES

“We rely on signage secondarily because people scan wholistically first to find their way and when they can’t find something that’s when they rely on signage.”

Rossbach says one of the best places to position a marketplace is right after security. Traveler apprehension drops after they get through the uncertainty of security, leaving passengers with a predictable timeframe before their plane leaves. It’s also gives retailers and concessionaires the maximum amount of foot traffic moving past their storefronts.

“We try to make sure there is a clear sight line so that once they step out of security they can instantly see where they need to go and the concessions that are available,” he says.

Grouping concessions together also makes sense. Rossbach says he likes to see a synergistic grouping of concessions at the center in a food court or a retail/concessions area, which also offers entertainment, which may include music and artwork. “This way you’ve got retail, food and beverage and services available, in a ‘town square’ type of space,” he says. “There is always this draw. They might have to walk past a store, past entertainment, past services, past restaurants, and there’s a likelihood that they’ll purchase more because all of these things are grouped together.”

Lobel agrees noting that entertainment does a lot to relieve traveler stress and in turn increases customer spending. Airports are now

expanding their offerings to include food and beverage and retail as well as entertainment venues and amenities tailored to passenger profiles. For example, Nashville International Airport understands that its reputation as the Music City draws people to the area, so it brings in local talent to entertain passengers.

"Gate lock is a strange phenomenon, and we have to entice passengers out of that gate," says Lobel. "That's why we look for really innovative amenities and interesting ways to pull people out."

KNOW THY TRAVELER

Do you know who is coming through your airport? Is the mix primarily business travelers? Is it vacationers? Are there a lot of families? These things must be known in order to provide the right mix of concessions/retail for the traveling public. One size does not fit all.

Corgan has studied passenger profiles and

how they spend their money and has learned a thing or two along the way, according to Lobel. For instance, a retired tourist is not a high spend passenger, but a tech-savvy traveler is. Those are the younger demographic with all the electronics, who seeks connectivity throughout their travel experience, and will purchase electronics at the airport. Frequent business fliers are not big spenders, but they may expect a sit down restaurant or a bar to pass the time.

Rossbach adds that international visitors often find products in the United States inexpensive and thus purchase more. "Sometimes they find things they can't buy in their own country and they want to purchase it before they leave," he says. "It's important to consider your international travelers versus your domestic travelers when deciding what food and beverage and retail outlets to provide." Higher load factors, larger aircraft, greater flight frequencies, aging facilities. These are all things that

contribute to a space crunch at today's airports. But there are things planners can do to alleviate the pressure. "We are unlikely to go back in the other direction," says Dubbe. "It's important that we amend these spaces and prepare them for the future. Airports need to figure out how to be more dependent on their own revenue generation and less on the airlines."

To do so they need to create attractive, comfortable places to pass the time. The first place to start is by removing congestion in the hold rooms and offering concessions/retail offerings that customers want.

"If people are comfortable, they will spend more, they will dwell longer, they will actually do business there, and even conduct meetings at the airport," Dubbe says. "Taking stress out of the equation drives everything we do, and we need to use behavioral science to figure out how to design spaces that people find comfortable."



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DFW Fire Chief Ignites a Learning Shift

Brian McKinney shares how he combined a mix of teaching techniques to create a cutting-edge progressive learning environment at Dallas-Fort Worth International Airport's Fire Training Research Center

Dallas-Fort Worth International Airport Fire Chief Brian McKinney says his background as an audio engineer on the weekends, for musicians the caliber of Grammy-award winning India Arie, aided him in crafting a cutting-edge aircraft firefighting and rescue (ARFF) training program at the third busiest airport in the world.



When asked to revamp the airport's Fire Training Research Center (FTRC), McKinney tapped into this background to mix different teaching techniques in a progressive learning environment.

McKinney, who began with the airport ARFF team in 1987, started tweaking ARFF training in 2003, when then-Fire Chief Alan Black, currently the Director of Public Safety, asked him to revitalize the center. As McKinney repaired, replaced and relocated the training program, he says he found himself thinking a lot about how people learn. "At the time I had three imaginative young children ... and as I watched how they learned, and I talked to them, I realized there was a huge generation gap in learning," he explains. "My kids would always say, 'Dad it doesn't work like that now. You have to think of it this way. Let me show you how.'"

McKinney says he eventually realized these generational differences would soon affect students coming to the center. "I realized that we really needed to upgrade, not just the nuts and bolts, but how we reach people," he says.

The culmination of his efforts and innovative training philosophy came in 2013, when the airport unveiled a newly renovated, \$29 million, 50-acre 8,000-square-foot Fire Training Research Center, which included classroom space, a control center, both propane and hydrocarbon fire burn pits and a full-size Airbus 380 (A380) mock-up trainer—the only one of its kind in the world with a focus on cargo and passenger training.

The center employs six full-time instructors and 18 adjunct instructors, who utilize a combination of research-oriented, multi-lingual curriculum, immersive digital activities and practical applications to arm students with the knowledge they need to fight aircraft fires and rescue passengers.

"Firefighters entering the profession are learning in ways previous generations did not," says McKinney. "They are learning in the electronic age with iPads, touchscreen computers and tablets. To ensure firefighters have the best opportunity to learn, we have developed a smart classroom environment that mirrors the style of training/education most people are familiar with."

Airport Business recently spoke with McKinney to learn how DFW keeps its training cutting edge and what it means to ARFF operations across the nation.

WHY IS REGULAR TRAINING CRITICAL FOR ARFF TEAMS?

Aircraft fires differ from structural fires in several ways. Aircraft tend to have higher concentration of personnel than a structure, close proximity of jet fuel and the high heat generated by the fuel, and the potential for high impact damage can make access difficult. Due to the inherent safety of modern day aircraft flying, aircraft firefighters cannot afford to be complacent. Constant training and practice helps these crews respond to an emergency as quickly as possible to provide the best avenue of escape for passengers

ON THE NEED FOR INTERACTIVE LEARNING ...

When you only have a white board, a projector and a PowerPoint, you're only hitting approximately 50 percent knowledge retention.

ON TODAY'S GENERATION OF LEARNERS ...

"Firefighters entering the profession ... are learning in the electronic age with iPads, touchscreen computers and tablets.

ON WHY ALL ARFF TEAMS NEED A380 TRAINING ...

Airports across the nation have to be ready in case one of these aircraft diverts to them. We had four diversion aircraft A380s at DFW before we got the first scheduled A380 flight.

ON WHY DFW INCORPORATED RESEARCH INTO ITS TRAINING FACILITY ...

As things in the industry change, our tactics and strategies need to change with it, staying ahead of the curve.

MEET MCKINNEY

► **Diggin' Digital.** My kids introduced me to Vine. It tries to tell a story within 15 seconds. That to me speaks to the speed of learning.

► **Fire Safety at Home.** When I went through fire school, we watched a video of a toaster catching fire and setting a house on fire. At home, whether it's the toaster or the coffemaker or whatever, I unplug it. My family will say, 'Hey, the toaster is not working.' And I'll say, 'That's because it's not plugged in.'

► **Working for the Weekend.** I'm an audio engineer. I mix large concerts and things of that sort. I recently got to mix for India Arie. That was nice.



and crew and quick mediation of the situation.

When firefighters respond to an aviation fire, they have to be in sync really quickly. You're also dealing with a potential mobile situation. The aircraft could be moving whereas a structure is stationary. And the job isn't over until everyone is back in service and everyone has gotten appropriate medical treatment. That is a huge responsibility.

HOW HAS AIRCRAFT FIRE AND RESCUE CHANGED SINCE YOU ENTERED THE PROFESSION?

When I entered this field, we did what's called "surround and drown." We would drive large vehicles to the scene and start discharging water to create egress paths for passengers. At that time, aircraft crashes or incidents were really not survivable and you were there trying to minimize the damage. What we learned from our two major crashes in the '80s was that survival was possible. With Delta Flight 191, 136 of the 152 passengers and 11 crew on board survived, and three years later when we had the Delta Flight 1141 crash, and 94 out of 108 passengers onboard survived, we started to realize we had to start to really look at not just aircraft firefighting, but rescue. We had to build up our skills and abilities to get more aggressive, moving from a defensive to an offensive operation.

Tactically we've seen changes as well in the vehicles we drive. We now have vehicles with thermal imaging capabilities. They have forward-looking infrared cameras that can detect hot spots to help us direct fire attacks. We have HRET, which is a High Reach Extendable



Students also learn in the field in smoke and heat-filled aircraft.



Interactive learning technology helps students learn airport and aircraft layouts.

Turret, which allows us to pierce the skin of an aircraft and introduce agents into the environment more quickly. We've seen other technologies like PyroLance, where we can actually punch a hole through the skin of the aircraft to put out cargo fires inside. We now have high expanding foam that uses less water and more foam. We're seeing more science coming into the picture.

All of these things are among the reasons why we wanted to be a research center. We not only wanted to teach people how to fight fires and rescue passengers, we also wanted to research ways to do so more safely, quickly and effectively.

HOW HAS TRAINING HAD TO CHANGE AS TECHNOLOGY AND TECHNIQUES CHANGED?

Learning is habitual. You have to continue to exercise the actual tools and master them. What you don't want is for something to happen and your ARFF team to lack the necessary muscle to execute. We've incorporated all of these new devices, PyroLance, thermal imagers, HRET, foaming agents and so on into our scenario-based exercises to ensure using them becomes second nature.

Going from a defensive approach to an offensive one also requires changing people's

mindsets. We wanted to develop a class environment that created a progressive platform where they could learn and understand these concepts.

HOW THE CENTER ADAPTED TRAINING TO TODAY'S GENERATION OF LEARNERS?

Studies show you retain 20 percent of what you hear, 30 percent of what you see, 50 percent of what you hear and see, 70 percent of what you experience and 90 percent of what you teach. When you only have a white board, a projector and a PowerPoint, you're only hitting approximately 50 percent knowledge retention.

Our SmartRoom's interactive ability helps students retain their knowledge by vividly engaging them. They see the systems, mechanisms and concepts in great detail, whether it's aircraft familiarization, airport familiarization or firefighting and rescue strategies. Their minds are vividly engaged and enriched.

With near 3D animation, they can go inside an aircraft. They can see where the fuel is, whether a particular aircraft model has fuel in the wings or in the tails, what the hydraulic systems are on the aircraft, and they can even go into the cabin of the aircraft and walk down the aisles. They actually see how the doors open; how you move the latch to the side on a 737

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and the door swings out and how on a 767 the door goes up and into the aircraft. They're able to go into the cockpit where they can hit the throttles and the bottles and discharge extinguishing agents, see how they function and where they're located inside the cockpit.

The second part goes beyond experiencing it. As I said, you learn 90 percent of what you teach. The students often become the instructors because the classroom becomes conversational. When they start to talk about each other's experiences it adds value. I'm learning from Tom. Tom is learning from Sharon. And Sharon is learning from somebody else because we're interacting and we're sharing our experiences.

WHAT IS MEANT BY PROGRESSIVE TRAINING?

The training center offers a progressive-style education. We take them into the classroom, where they are engaged, enriched and visually stimulated. Then we take them into the field to learn in an actual Boeing 727. We put them in a smoke-filled environment where they can't see their hands in front of their faces. They have to do searches. They have to gain access into the aircraft using their tools and ladders and they have to drag a hose. Then we take them to one of our fire trainers where we introduce heat as well as smoke. Now they have to go into the aircraft and fight fire. Then we take them into a larger aircraft, our A380, where they have to fight fire on three different levels. You have the cargo level, the main cabin level and the upper cabin, and there could be fire in any one of those levels including the flight deck and cockpit.

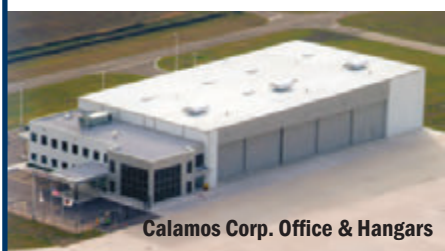
In this way, they gradually graduate from one step to another step to another step. At the end they experience liquid hydrocarbon fires. We fight them with an environmentally friendly fuel.

ON-THE-GO ARFF TRAINING THE DFW

learning management system (FTRSuite) gives students access to training and research materials anytime, anywhere they have an Internet connection. This additional training method will help airports worldwide save money and reduce environmental impacts for training, supporting the growing need for sustainability while staying current in the latest innovations and firefighting techniques. To learn how your airport can access FAA-mandated training content and immerse your ARFF teams in an interactive 3D universe with facilitated classroom collaboration and testing, visit www.ftrsuite.com.

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Students learn in a smart classroom that allows instructors to present material in an enriching, engaging and stimulating way.

WHY IS IT NECESSARY FOR ARFF TEAMS TO HAVE EXPERIENCE WITH THE A380?

The A380 is the largest commercial passenger aircraft in the world. According to Airbus, it can carry up to 850 passengers. Your standard aircraft carries 100 to maybe 300 people. If there was an incident involving an A380, your mass casualty response could be up to eight times as large. And, because the aircraft is heavier, larger and can fly to any two points in the world, it has a larger fuel capacity. Airports across the nation have to be ready in case one of these aircraft diverts to them. We have incorporated the A380 into our training to give airports that do not receive scheduled service an opportunity to see the strategies and tactics that would be needed if this plane would divert to their airport due to weather, mechanical or medical emergency. We had four diversion aircraft A380s at DFW before we got the first scheduled A380 flight.

WHAT TYPES OF RESEARCH IS CURRENTLY BEING DONE AT THE CENTER?

We recently entered into an agreement with the FAA Technical Center, which researches all things aviation. We've worked with them on the HRET, which pierces an aircraft above the heads of the firefighters that are operating it inside the truck. The angles that they're piercing the aircraft are often skewed. We're working with them on some dynamics to allow that process to be more seamless and streamlined.

We are in talks with a group from Norway to test their foam. In Europe, it's more environmentally friendly foam than what we currently use. We will be doing some comparison testing with them. We're also trying to bring on professors with Embry-Riddle Aeronautical University so that we can start working on additional research projects with them.

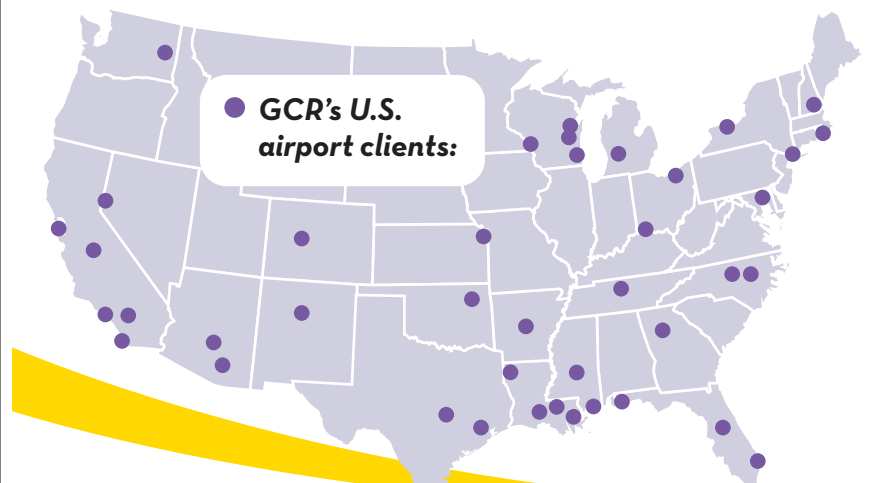
The research component is really critical. As things in the industry change, our tactics and strategies need to change with it, staying ahead of the curve. For example, there is talk about

new fuels in the aviation industry. We need to know what those fuels are and how our legacy agents like foam, and water react to those. Should we be looking at a different type of agent? Should we look at a different type of vehicle? Doing this research keeps us on the cutting edge of the industry.



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Wichita's Terminal Takes Off

When an airport resides in The Air Capital of the World, customer expectations soar. Wichita Dwight D. Eisenhower National Airport opens a terminal befitting of the city's lofty title.

When an airport resides in a city known as The Air Capital of the World, first and last impressions matter. So, when it came time to revamp Wichita Dwight D. Eisenhower National Airport, developers knew one thing for certain—whether they built a new facility or remodeled the existing one, the new terminal had to pay tribute to the area's aviation roots.

Before the first shovel hit the ground, HNTB Corp. building architects spent months researching the city's history and developing ways to incorporate Wichita's aviation past into the new building's design. They studied a history that dates as far back as the 1920s and 1930s, when businessmen and aeronautical engineers opened a number of successful aircraft manufacturing companies, including Beechcraft, Cessna and Stearman Aircraft. Today, the state's largest city, which an estimated 387,000 people now call home, is known as The Air Capital of the World being home to Textron Aviation (Beechcraft, Cessna and Hawker), Bombardier Learjet, Airbus and Spirit AeroSystems.

Recently, the city unveiled a sparkling new, \$200 million terminal where every inch of its 275,000 square feet reflects the region's avia-

tion heritage, from its long swooping exterior that captures the motion of flight to its interior mix of stainless-steel and metal finishes resembling an aircraft down to the tiniest detail. Thin aluminum stripping adds an intricate design to the terrazzo floor evoking the feeling of an airplane's contrails, while air vents are designed to look like jet engines, and the ceiling is shaped like the window or portal of a commercial jet. On the mezzanine level, seven displays by Image Resources serve to educate and inform travelers about aviation in Wichita.

"The new terminal is truly a reflection of Wichita's aviation prominence as The Air Capital of the World," says Victor White, director of airports for the City of Wichita Airport Authority. "It's our gateway to the world, and the world's portal to Kansas."

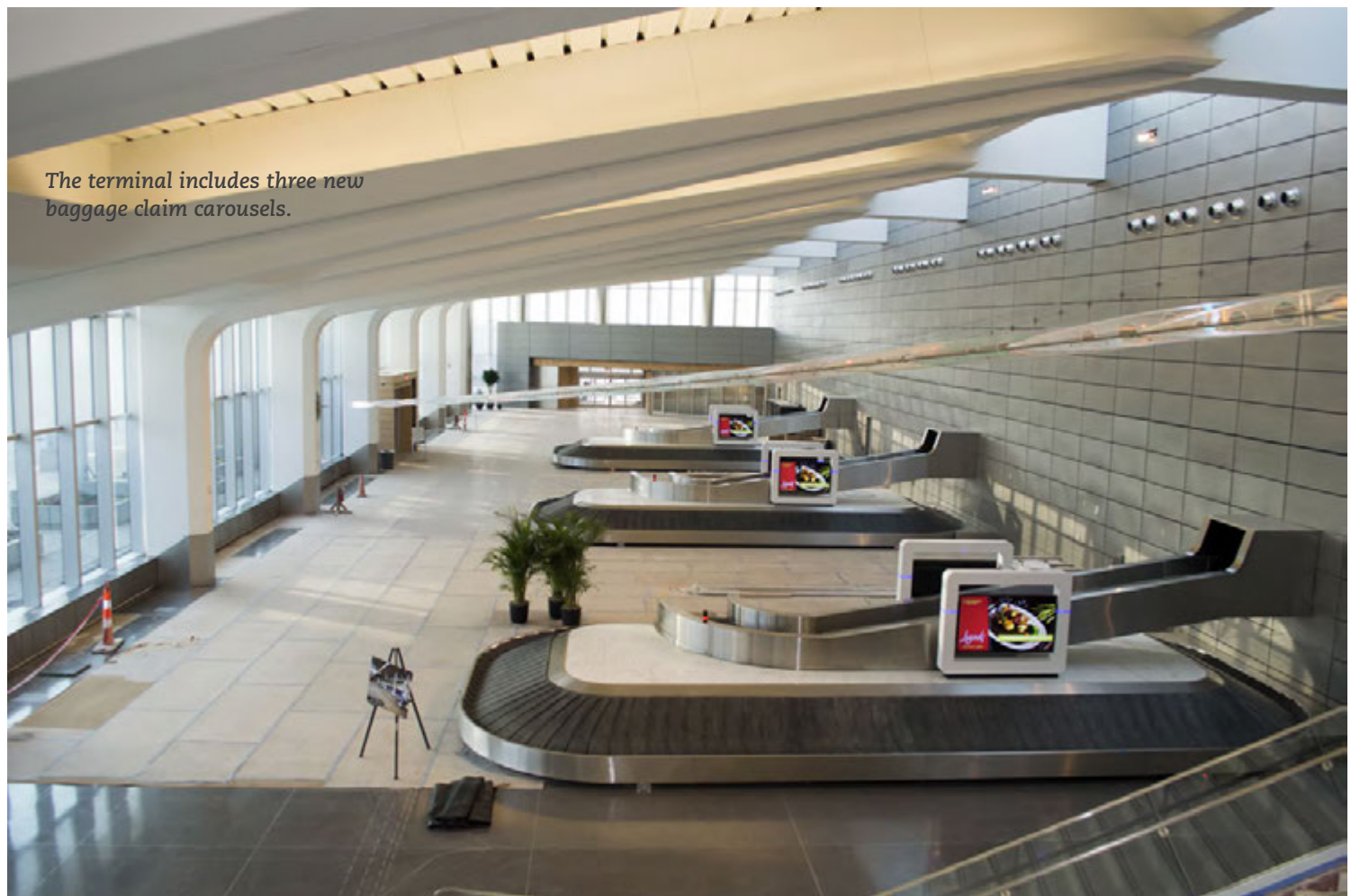
The 360-foot long dichroic safety glass art piece arches over the airport mezzanine.

**BY THE
NUMBERS**

- ▶ 2 Escalators
- ▶ 3 Baggage Claims
- ▶ 3 Retail Shops
- ▶ 4 Security Lines
- ▶ 5 Airlines
- ▶ 6 Concessions
- ▶ 9 Nonstop Destinations
- ▶ 9 Rental Car Companies
- ▶ 10 Elevators
- ▶ 12 Gates
- ▶ 29 Ticket Counter Spots
- ▶ 111 Bathroom Stalls
- ▶ 143 Security Cameras
- ▶ 275,000 Square Feet
- ▶ 1,600 Parking Garage Stalls

— Source: Wichita Dwight D. Eisenhower National Airport





The terminal includes three new baggage claim carousels.

THIRD ACT

When it comes to building a new terminal, this is the small hub carrier and general aviation complex's third act. The city opened its first airport terminal 80 years ago, its second new terminal 61 years ago and its new facility this month.

All three buildings were brand new facilities as opposed to revamps of existing ones. It's not that the community prefers new to old, but rather when looking at what to do with an existing terminal, developers have found the cost to be roughly the same. In this case, the current terminal, last renovated in 1989, had become functionally obsolete. It didn't meet current building codes, whether it was plumbing, electrical or seismic. And, it had become expensive to maintain.

"The decision was pretty clear after we did the financial analysis and looked at the impact to customers, airlines and tenants," White

says. "The cost was roughly the same but it would have taken twice as long to renovate the existing facility."

Even so, developers had to verify these numbers three times over the course of the project. The City of Wichita Airport Authority approved building new in late 2004 after conducting an extensive community engagement process and financial study. They contracted with AECOM in 2005 to serve as the project's program and construction manager, and when the airport hired HNTB Corp. as the master architect and engineer in 2006, they verified the numbers again. When the recession hit, the community tabled the project again until 2011, when Wichita Airport Authority finally pulled the trigger after conducting another financial feasibility analysis.

"Each time, the cost estimate showed that it was slightly cheaper to rebuild the existing facility, but would take twice as long and be highly

disruptive to the operations of that facility," says Pat McCollom, associate vice president, program management for AECOM. "We ultimately decided to build new and keep disruptions to a minimum."

In 2011, they finished the plans and specs, put it out to bid, and began construction in 2012. In less than three years, crews finished the new terminal with 12 gates, nine of which opened immediately. The airport also has the capacity to add gates at either end of the concourse to reach 20, without doing any major surgery on the facility, adds White.

The airport paid for the entire project with Passenger Facility Charges, rental car and parking funds, pay-as-you-go airport system revenues, surplus cash, and concessions/retail rents, according to White. The City of Wichita has issued general obligation bonds to support the project, but the debt service will be repaid

entirely with airport revenues. The airport also received approximately \$60 million in FAA funds and \$8 million from the TSA to offset the cost of the outbound baggage handling system.

They currently seek federal funds to demolish the old terminal building, which rests too close to gates 10, 11 and 12 to operate them. They hope to tear down the old building this fall, with the exception of the basement, which will remain in use, due to the presence of extensive utility services and airport maintenance shops.

"That's one of the things that helped get airline support for the project early on," says White. "We shaved \$5 million from the project by leaving the basement in place and just tearing down the structures above. We also cut \$20 million from the original project concept by eliminating a second-level roadway in front of the terminal because vehicular traffic didn't justify it."

BUILD IT BRIGHT

"An airport terminal is the first and last impression for visitors to the area," says McCollom. "We felt it should speak to the capabilities of the people here, the aircraft manufacturers in town, and the high-tech businesses."

To accomplish this, they engaged businesses, citizens, customers and stakeholders early in the planning process. "They said they wanted the airport to reflect that this is a growing town; a modern town," White says, adding that the existing terminal left visitors with a lasting impression but not necessarily a good one.

One of the first things visitors will notice now is the bright and spacious feeling of the new facility, which is able to handle up to 2 million passengers a year—approximately 500,000 more than it does today. "One of the big things is just the sense of space you have in this building and the large generous areas you've got," says Philip Hannon, architect, HNTB.

White admits the new building is "roughly the same size square footage-wise, offering just 10,000 square feet more," but it's more efficient. The traditionally shaped H terminal features walking distances that are half what they were in the current terminal because White says they "shrunk everything and made it more compact."

But it's not something visitors will notice because high ceilings; light colors; plenty of windows and skylights, all of which are blast-resistant glass made to withstand severe weather conditions; make the terminal

look larger than it really is. "Though similar in square footage, the new facility is roughly 60 percent larger in volume, which means it's more open and more spacious," McCollom says. "The high ceilings make it feel much larger."

EASY BEING GREEN

"Community leaders also asked that the building incorporate as many environmentally conscious features as reasonably possible," says White.

In response, HNTB included sustainable systems designed to operate efficiently and adapt well to future technological advancements.

The project includes an energy-efficient HVAC system and lighting. The new facility has up to five times as many windows as the old one, which significantly reduces the amount of artificial light that must be created. Daylight harvesting systems dim or switch electric lighting in response to changing daylight availability, further reducing energy use. In-pavement heating systems by the curb limit ice and snow buildup, and inside bag make-up rooms, keep the area warm in the winter and cool in the summer.

However, though designed and built to LEED specifications, the airport opted out of obtaining LEED certification. "We felt it was appropriate to include the sustainable features, but not pay for the commissioning and actual certification," McCollom explains. "It would have been nearly \$300,000 to certify the building, and we felt that \$300,000 could be used elsewhere."

PUT PASSENGERS FIRST

The community also asked that the new airport put passengers first by simplifying the stress of travel and building in the amenities they desired. The terminal's first floor houses arriving and departing passengers, ticketing, baggage claim, and airline and operations support, while the second floor features exhibit space, security, retail, food venues, and departure and arrival gates. The terminal's new flexible gate system can accommodate a range of aircraft and incorporates the largest installation of glass-walled passenger boarding bridges in the country.

"The cost was roughly the same but it would have taken twice as long to renovate the existing facility."

VICTOR WHITE, DIRECTOR OF AIRPORTS, CITY OF WICHITA AIRPORT AUTHORITY

The old ticketing area was "crowded, cramped, low and dark," describes Hannon. The new one lets in lots of light. The ticket counters meet Americans With Disability Act requirements for height and accessibility. Recessed computer floor areas are in place, 15 feet in front of the counters, if airlines wish to reconfigure check-in operations. "There are actually three locations that they can put in kiosks," says White. "They can put them at the counters, on

"Building and opening a new terminal is a daunting and extremely complex set of tasks. The Chrysalis team has been a huge benefit to us."

- Victor White
Director of Airports
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the raised floor 15 feet away from the counters, or across in the front hall.” “We tried to keep the ticket area as flexible as possible,” explains Hannon, “to address the changes that happen all the time in the aviation industry from a process standpoint.”

All checked bags go into a single inline baggage system, eliminating the need for passengers to hand carry their bags from ticket counters to TSA scanners.

Another passenger friendly feature is the fact that visitors no longer have to go up a ramp and through narrow lines to the security checkpoint. In addition, the security area is a beautiful space designed to calm the travel process. A honeycomb design on the ceiling filters natural light from 15 skylights overhead while the use of Terra cotta tiles, stainless steel and blue glass further the sense of calm.

White adds the airport keeps lighting lower in the security area than in other parts of the airport because it has a calming effect. “It keeps the area more tranquil,” he says. “We have pockets of brightness in the check-in areas, at the gates, in the walkways and restrooms, employee work stations, and areas like that.”

Passenger amenities also include new concessions and retail offerings—post security. The prior arrangement placed most concessions pre-security, which Hannon says meant travelers had to guesstimate their schedules to make sure they had time to eat before they headed to their flights. “There weren’t any options after they went through security,” he says.



Geothermal heating in the concrete will prevent snow/ice buildup in walkways. While banks of windows let in plenty of natural light.

“We found out across the board that customers wanted conveniences we didn’t really have in terms of food and beverage concessions and retail offerings, and they wanted them in the right place,” White adds. “In the old facility, 90 percent of our concessions were pre-security. In the new one, 85 percent are post security.”

New concessions options, operated by MSE Branded Foods, include an Aviators Cafe and bar pre-security, and a Grab and Fly snack center with a wine bar, Dunkin’ Donuts, Chick-fil-A, River City Brewing Co. and Air Capital Bar post-security. On the retail side, Paradies manages two CNBC Smartshops and

the Air Capital Market in the concourse.

Once at the gate, passengers will find plenty of plugs for their electronics—a fact brought up in every focus group the airport held. “We’ve gone overboard to some degree—nearly every seat has two electrical plugs and two USB plugs,” White says. Between gates, the airport also included a work area with bar stools that offer 10 power outlets and USB ports to charge electronics.

Passengers get to their plane through air-conditioned and heated glass-walled jetways—a big first in the airport’s history. “There will be a jetway at every gate,” says White.

A covered walkway keeps passengers out of the elements as they walk to the covered parking garage—also a first in the airport’s history. A consolidated rental car facility is attached to the garage. This was a separate \$40 million project, says White. “We did not originally plan to build a parking garage and rental car facility. We were just going to continue to operate with our existing surface lots,” he says. “But customers told us this was something they wanted. That’s why it’s a separate project with its own budget and funding sources. Overwhelmingly the public is thrilled by this addition.”

In recent months, Wichita Dwight D. Eisenhower National Airport, formerly known as Wichita Mid-Continent Airport, received a new name and a new terminal. Both meet the lofty expectations customers set when passing through an airport situated in The Air Capital of the World.



LIFE IS ART

THERE'S A popular saying, “Life is art, live yours in color.” Though it applies to people and how they live their lives, it also carries over to the airport. “We heard over and over in our planning meetings: ‘Make sure you have some good public art,’” says Victor White, director of airports for the City of Wichita Airport Authority. The airport hired a public art consultant on HNTB’s team to look for an artist to create just such a piece

They ultimately retained Portland, Ore.-artist Ed Carpenter, who designed a piece of public art that will span more than the length of a football field. The 360-foot long piece, constructed of dichroic safety glass, stainless steel cables and turnbuckles and cellular polycarbonate, arches over the airport’s mezzanine from the ticket counters to the baggage claim. According to the artist, the piece has “wing-like qualities” that evoke the feeling of wings or flying.

In total the art and exhibits for the terminal cost approximately 1 percent of the construction budget.

Ralph Hood
 Certified Speaking Professional;
 Member, Alabama Aviation Hall of Fame



Aviation Fuel Tax Cap In Tennessee?

Two bills are under consideration for the state of Tennessee—Tenn. House Bill 1147 and Tenn. Senate Bill 0982. Everyone familiar with these bills seems to have strong feelings one way or the other, and I'm no exception.

Early this week AOPA's State Advocacy Team sent out an email with the subject—in 24 point bold face type—**Save Tennessee Airport Funding TODAY**. As explained by AOPA, Tennessee currently imposes a state tax of 4.5 percent on aviation fuel purchases. If passed, the House and Senate bills will—over a four-year phase-in period—place a cap of \$10.5 million on the amount of aviation fuel tax paid by any single user in one year. This would be a huge tax break for business, but would reduce fuel tax funds available to Tennessee airports by nearly 50 percent. Airports around the state will suffer the consequences. Hereinafter, "AFTC" will mean "aviation fuel tax cap."

The AFTC will benefit only one giant business: FedEx. It is the only company

pany is a terrific asset for the state. FedEx founder Fred Smith is himself a member of the Tennessee Aviation Hall of Fame.

Like most aviators, I would like to lower aviation taxes as much as possible, but this situation is far from simple.

Tennessee airports are working hard against passage of the AFTC. The income from fuel taxes supports airports. If that money dries up, how will it be replaced? Will locals have to pay higher taxes just to keep their airports?

Many ask if FedEx is making threats, like maybe moving their headquarters out of Tennessee. AOPA says the answer is a simple "No." FedEx has made no threats. The company has pointed out that some nearby states do have AFTCs which encourages FedEx to purchase as much fuel as possible in those states rather than Tennessee. That's a reasonable point, not a threat. FedEx is a good citizen.

Tennessee's House and Senate bills seem to be rushing toward quick passage. In early April, the AFTCs appeared as amendments to less controversial proposed bills—some call it an April Fool joke. I'm told that the Senate bill is on the agenda for the week of April 20, and many expect the House Bill will follow closely. The Tennessee vote may be settled when you read this, but could this type of thing arise in your state next?

The AOPA State Advocacy Team urged me to contact my State Rep and State Senator. I did, and was told at each office that the office holder would call me back. Neither did. That's odd because at a recent public meeting they both invited their constituents to call for any reason.

I also called the AOPA's State Advocacy Team. Paul at that office gave me the info he had and promised to call me right back with additional info. He then did exactly that! As the old saying goes, "Who ya gonna trust?"

It's a tough situation. As for me and my house, we oppose the cap.



Like most aviators, I would like to lower aviation taxes as much as possible, but this situation is far from simple.

currently paying more than \$10.5 million in aviation fuel tax to the state of Tennessee. FedEx pays some \$32 million in such taxes. Let it be noted, FedEx is based in Memphis, Tenn., and the com-

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Fort Worth FBO Rocks the IS-BAH

American Aero's flightpath to becoming the first U.S. FBO to earn IS-BAH certification

In the business world, especially one like the FBO business where quality of service is often the only differentiator, there's nothing quite like being first at something.

After being in operation less than two years, American Aero at Meacham International Airport in Fort Worth, Texas, managed one of those firsts when it became the first FBO certified under the new International Standard for Business Aircraft Handling (IS-BAH).

Adding to American Aero's first is that the "Cowtown" FBO is actually the first in the Western Hemisphere to hang an IS-BAH certificate on its wall. An FBO in India also recently gained its IS-BAH certification.

The choice to earn IS-BAH certification seemed right in line with American Aero's other business goals set long before the staff

greeted their first airplane. American Aero, currently staffed by 21 employees, evolved from the old Atlantic Aviation facility at Meacham Airport. Atlantic's facility was in decline when a local company, Group Holdings Inc. took an interest. Group Holdings wanted to create a flight department run by industry users, people who truly understood what pilots and their passengers want and need.

In the summer of 2012, American Aero opened its doors as a Signature Select-affiliated operation offering the benefits of the Signature Flight Support Network. By mid-April 2013, the new FBO was acquiring

hangars, building hangars and helping restore the old 75,000-square-foot American Airlines' terminal building, which dates back to 1933. American Aero eventually plans to lease approximately 8,400 square feet of that updated space. In addition to round-the-clock U.S. Customs services, American Aero also plans to build three, LEED hangars and a two-story office complex while increasing its ramp space



Riggs Brown, general manager, American Aero



IS-BAH certification fits the overall plan of this Signature Select FBO, which strives to safely provide customers with top-of-the-line aviation services.

from two to six acres. Additional hangars slated for completion this year will accommodate aircraft as large as a G-650.

With all that on the table, obtaining the new certification made sense. “When we heard about IS-BAH, we bought into that right away,” says Bob Agostino, vice president of American Aero and a G-650 pilot. “General Manager Riggs Brown and his team went through the IS-BAH process for a couple of reasons ... to differentiate us from other FBOs, but also to validate and improve the FBO’s processes where they were needed. We knew, though, that we’d need to build a culture within the FBO that understood what the safety envelope is all about.”

IS WHAT?

The IS-BAH label is still relatively new to most people in business aviation having been launched just shy of a year ago. The certification evaluates FBOs to a common, voluntary, yet measurable standard of quality and safety similar to that in place for flight departments under the International Standard for Business Aircraft Operations (IS-BAO). The new IS-BAH standard evolved from a partnership between the International Business Aviation Council and the National Air Transportation Association.

The IS-BAH certification is really an extension of the IS-BAO version with a goal of eliminating as much risk as possible for FBO clients. Agostino says his flight department has been IS-BAO Level III certified for nearly eight years because early on they saw value in formalizing operational practices and expanding the safety envelope.

The new certification demands a robust safety management system (SMS) is already up and running. American Aero General Manager Riggs Brown explains the pragmatic reason for IS-BAH. “We understand aircraft safety does not end when the engines are shut down and the aircraft is chocked.”

Considering the long list of hangar mishaps costing tens of millions of dollars in claims at

FBOs worldwide, it’s actually surprising something like an IS-BAH standard took this long to emerge. “IS-BAH is the logical extension of the safety envelope that sets an international standard for operations in business and general aviation aircraft ground handling,” Brown stresses.

Mike France, NATA’s Director of Safety & Training, says the association’s move toward what would eventually become a partnership with IBAC, “began four or five years ago when our FBO members began telling us they were getting audits from customers and from airports. They said a single standard to adhere to would make their lives much easier.”

Another FBO driver, according to Bob Bauer, came directly from the clients themselves, the people who sue FBOs when aircraft are damaged being tugged around the ramp. Bauer is president of Conway New Hampshire-based Comprehensive Aviation Technical Services LLC, the company that supplied the auditors for American Aero’s certification.

“Usually it’s the larger operators who have experienced damage while parked at an FBO too,” he says. “Some FBO managers might think using a tow driver and two wing walkers consumes a lot of manpower when moving an airplane, but consider the cost of a mishap whether it’s measured in personnel or damage to an aircraft or other equipment.”

“It ... is a tool for the employees and the company, but also for our customers to know that we take care of their aircraft when it’s in our care.”

**RIGGS BROWN, GENERAL MANAGER,
AMERICAN AERO**



American Aero's flight department is run by industry users who understand what pilots and passengers want and need.

IS-BAH is expected to help policies become more consistent across the industry, even on the smaller items according to Bauer. "For instance, flight crews ask for fuel to be waiting for a quick turn and only find as they taxi in that the fuel truck is broken, or learn just before departure that their catering was mishandled or a fueler left a door open."

Bauer thinks the internal FBO audits demanded by an IS-BAH certification will help

IS-BAH BASICS

By Steve Smith

THE IS-BAH follows the long established structure of the International Standard for Business Aircraft Operations (IS-BAO) Program and incorporates the NATA Safety 1st Ground Audit Program.

As one global industry code of best practices, IS-BAH will provide standardization to handlers and operators around the world to meet the coming SMS requirements from the International Civil Aviation Organization (ICAO).

Introduction to IS-BAH

Implemented on July 1, 2014, the International Standard for Business Aircraft Handling (IS-BAH) is designed to promote use of industry best practices blended through a progressive Safety Management System (SMS) for Fixed Based Operations (FBO) and Business Aircraft Handling Agencies (BAHA). It provides baseline requirements for structuring a FBO/BAHA in the planning and conduct of their operations; it challenges these organizations to review their current systems, programs and procedures, recognize strengths and weaknesses in those procedures, and upgrade to a higher standard. The standard is based on International Civil Aviation Organization (ICAO) standards and recommended practices in the preparation of handling business aircraft.

IS-BAH is an industry code of best practices developed by the international business aviation community for the benefit its members. It is the group's contribution to promoting highly professional operational practices that will build on the excellent safety record already established by business aviation. Conforming to these standards and recommended practices is voluntary and may be self-administered. However, recognition for implementation of and conformance to the standards is available via an auditing process that results in an IBAC certificate of registration.

The program centers on the Safety Management System (SMS) developed by ICAO and other operations-critical industries. It leads the operator from establishment of beginning principles to a sustainable SMS and operations program to a performance-based, risk averse culture for both large and small FBO/BAHA's. Audits conducted every two years ensure conformance with the standard and provide valuable feedback to the operator. The registration certificate issued upon successful completion of an audit serves as proof of compliance with several key ICAO standards, which are required for operations in number of countries.

Audits concentrate on SMS development through a gradual process of advancing maturity:

- ▶ Stage One confirms that the SMS infrastructure is established and that safety management activities are appropriately targeted. All supporting standards have been established.
- ▶ Stage Two ensures that safety management activities are appropriately targeted and that safety risks are being effectively managed.
- ▶ Stage Three verifies that safety management activities are fully integrated into the operator's business and that a positive safety culture is being sustained.

- ▶ More than 700 business aviation operators in 35 countries are currently IS-BAO registered, which continues to improve their safety risk profile and operating effectiveness and efficiency. These business aviation flight operations, as part of their SMS requirements, seek verification of the level of proficiency of the handling of their business aircraft. IS-BAH provides a means of conformity to those requirements

Benefits of IS-BAH

IS-BAH registered FBO/BAHA's will benefit from the same advantages experienced by current IS-BAO registered operators, who are enthusiastic in their praise of the program noting that since implementation they experience:

- ▶ Enhanced operational safety through predictive and proactive methods.
- ▶ A sense of teamwork and pride of achievement among their personnel.
- ▶ Improved efficiency and effectiveness through an integrated management system.
- ▶ Increased senior management understanding and appreciation for the flight department.
- ▶ Reduced insurance rates.
- ▶ The ability to measure overall department performance.

produce a better product. “Some FBOs today still announce changes to their internal processes by pinning up a memo somewhere hoping all the employees will see it and take action. But they never really know whether everyone saw and understood what they read. IS-BAH suggests a read file that everyone signs off on, as well as regular risk assessments.”

MODIFY MINDSETS

Agostino spoke to one of the biggest concerns for people new to any kind of quality and safety certifications ... “effectively blending any new procedures and policies with the local culture of the current staff,” people who often look at safety management systems and the like as nothing more than unnecessary paperwork. He spoke of employees at any FBO who are often the most experienced who believe they “don’t need anyone telling them how to perform a job they’ve been doing for years.”

Agostino is realistic about the FBO’s new certification and extends a word of caution to all operators. “Any SMS can be defeated by an individual if that person elects not to follow the process and the procedures. While SMS is non-punitive, that

“[We] went through the IS-BAH process for a couple of reasons ... to differentiate us from other FBOs, but also to validate and improve the FBO’s processes where they were needed.”

BOB AGOSTINO, VICE PRESIDENT, AMERICAN AERO

doesn’t eliminate penalties for negligence or incompetency.” He adds that a comprehensive training program established long before the IS-BAH certification gave American Aero personnel a springboard to the buy in they needed to make the system work.

Almost any safety reporting system could be viewed as a hindrance at first glance. The key is to also make everyone realize an SMS is not a witchhunt to punish violators, but rather a system to identify those annoying little workplace incidents long before they become costly accidents.

Bauer reminds operators that “the lack of an accident doesn’t indicate an operation is safe either. What about close calls that are never recorded,” he asks. “The people on the ramp are sometimes the least educated about operations of anyone in the organization, but they’re the only ones actually working on the aircraft.”

Before too long, IS-BAH will become as widely an accepted standard for FBOs as IS-BAO is for flight departments, predicts Brown. “It really is a tool for the employees and the company, but also for our customers to know that we take care of their

aircraft when it’s in our care,” he says. “They can worry a little less. To us it means we’ll also be going that extra mile to help our customers.”

“Nothing in our profession remains constant, certainly not the FBO business,” adds Agostino. “IS-BAH is a vehicle to help that evolution occur in a much safer way.”



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Runway Safety Areas Turn a Shade of Green



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The first environmentally friendly, FAA-approved, RSA arrestor bed has been installed at Chicago's Midway International Airport

Earth Day has come and gone once more, but green is here to stay.

Runway safety areas have turned a shade of green. The first environmentally friendly, FAA-approved, RSA arrestor bed has been installed at Chicago's Midway International Airport.

This is the year for Runway Safety Areas (RSAs). By the end of 2015, the FAA has set a goal to improve these features at all commercial service airports. All must comply with the RSA standards which state that a paved or grass 1,000-foot setback or instead, an arrestor bed, must be in place to stop overrun airplanes.

The FAA has been researching this issue since the 1990s and with a group effort of private and public sectors, developed the Engineered Material Arresting System (EMAS). It uses crushable material at the end

of the runway to stop airplanes in their tracks at 80 mph. Today, there are two approved EMAS systems and one of them brings a shade of green to RSAs.

"With the certification of Runway Safe, airport directors now have the opportunity to choose the best product for the needs of their facilities, as well as incorporating sustainable elements, such as recycled glass," says Karen Pride, director of Media Relations for the Chicago Department of Aviation (CDA). "The product is also cost efficient and durable, with ease of installment and replacement."

MIDWAY MAKES ITS MOVE

A total of 51 airports do have arrestor beds in places where RSAs are not possible because of space constraints. The FAA says that since 1999, nine planes have been stopped with EMAS systems. "Airports have the problem of encroaching civilization around them," says Kirk Marchand, CEO of Runway Safe LLC, the U.S. entity of the company. "You build an airport, some runways and

before you know it, there are industrial parks all around and no space to expand. These arrestor systems have helped.”

From 2007-2011, Marchand says the FAA, in cooperation with the U.S. Transportation Research Board, through a group called the Airport Cooperative Research Program (ACRP), funded a research and developing project to find alternatives to the single existing EMAS system. One of the group's recommendations was a material called Glaspor, made by a company in Norway, Norwegian Glass Recycling.

Recently installed at Chicago Midway International Airport's (MDW) Runway 22L, Runway Safe LLC's product is the first placement of its kind in the country.

Up until the Runway Safe solution was approved in 2012, only one other EMAS had been accepted for use by the FAA. The green Runway Safe EMAS at MDW replaces the original system by Engineered Arresting Systems Corp. (ESCO), which was installed after a plane skidded through an MDW airport fence on a snowy Dec. 8, 2005. The Southwest Airlines' Boeing 737 hit a car and killed a young boy in the vehicle. The incident was a coincidence, as the beds had been approved three months prior by the FAA, but the accident is also what led the airport and others to this 2015 requirement.

The ESCO crushable concrete arrestor beds made of lightweight blocks have deteri-

orated over time, explains Marchand. Jet blast loads have contributed to this. “Especially at an airport like Midway, the pilots use up just about every foot of the runway that they can,” he adds. “They put full thrust to take off and that jet blast blows over the arrestor beds.”

For MDW, this had become a problem that needed addressing, and with the Runway Safe solution now an approved option, the next step was logical. Pride says that in 2007-08, MDW installed four ESCO EMAS beds.

“Since their installation, the Department has experienced significant maintenance issues with these original beds,” she adds. “At the time, ESCO was the only FAA certified manufacturer of EMAS. In 2012, the FAA-certified Runway Safe as another manufacturer of EMAS. The Department began to evaluate the Runway Safe product and determined that it was right solution for Midway and O'Hare.”

INSTALLATION MADE SIMPLE

Marchand says the arrestor bed installed at MDW is 245 feet long and 170 feet wide, a good option for their limited space and inability to have a full RSA at 1,000 feet long, or a longer



“Airports have the problem of encroaching civilization around them.”

**KIRK MARCHAND, CEO,
RUNWAY SAFE LLC**

arrestor bed of 600 feet long. “Midway is a unique situation in that the beds were built to fit whatever safety area they had,” he notes, and says the solution for each airport is dependent on its fleet mix, or plane varieties which utilize the pavement. This research is part of the company's overall installation process: first determining the weight loads and jet blast loads the EMAS will have to handle.

At Midway, the aircraft coming through are primarily Southwest Airlines' Boeing 737s. “At O'Hare, it's a different story,” Marchand says, giving a nod to the larger aircraft for international and cargo flights. “So those arrestor beds will be designed differently.” Currently, Runway Safe has a bid to add additional arrestor beds at MDW and O'Hare International Airport.

Runway Safe's green EMAS is a pour-in-place solution, which makes actual installation simple and done on-site rather than produced in a factory, then secured by glue or another manner. The foam glass is poured above pavement, then a layer of controlled low-strength material (CLSM) is added and a final cover of methyl methacrylate (MMA) polymer topcoat is installed.

The installation at MDW was completed on Nov. 13, 2014, and took three phases to accomplish. First, there were three nights of pre-closure to the runway for removal of the old arrestor bed, surveying the site and installation of anchors.

Second, a total closure of the runway for only 56 hours straight allowed for installation through the CLSM. Marchand says the team began on a Wednesday night, removed the old system. On Saturday it was open for landings and by Monday it was open for departures.

A GREEN EMAS

Runway Safe's green EMAS system is compliant with the United States FAA Advisory Circular 150/5220-22A. Pride says when the FAA



The MDW arrestor bed is 245 feet long and 170 feet wide.

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Glasopor silica glass foam makes up the bulk of the material in the arrestor bed.

certified the new provider, the CDA was eager to evaluate the product and see if it was a good fit for MDW. “This was a great opportunity to evaluate another FAA-approved product that provides a means to safely stop an aircraft, if necessary, upon landing,” she says. “And, the product itself is in alignment with CDA’s commitment to sustainability.”

The Glasopor silica glass foam is the bulk of the material, explains Marchand. It’s a loose fill and every piece is crushable foamed glass, a patented formula. Typically, it can be found as a roadbase material, insulation and on athletic fields.

“It’s a completely stable (chemically and biologically inert) material,” he says. “It’s basically sand, so water or heat won’t break it down.”

The low-strength Glasopor is poured between Tensar BX Geogrid walls then leveled and compacted. The walls provide anchoring against jet blast uplift. The foam glass layer increases in thickness from the front to the back of the arrestor bed, to help a plane smoothly decelerate.

Once the aircraft enters the bed, the landing gear enters and crushes that material. Marchand

says it uses up energy, which then slows the aircraft down quicker. The combination of the braking, reverse thrust and now crushing the material allows it to safely stop in a third or half of the normal distance.

He says another benefit of the green EMAS is the absence of chemicals that can leach out, and that it will have a long life and not impact the environment in a negative manner.

Marchand says this system is constructed on-site, not shipped in packages and only assembled at the airport. “We feel it will

perform as well or better from a serviceability standpoint,” he says, explains it’s a monolithic system. “There are no joints to leak or weaker over time.”

When it comes to maintenance, this green EMAS comes with a five-year warranty, so while Marchand acknowledges any additional cost is a concern for any airport executive, “life cycle costs will be much lower than with a different system,” he says. “Be assured that for five years you won’t pay a nickel to maintain the bed. Now, if a plane runs into it, that’s another story.”

Pride is happy for the warranty, as she says it gives the CDA a level of comfort as the airports adjust to the product, especially as its launch customer. “For ongoing maintenance, the CDA is projecting that its annual maintenance expenses will be significantly reduced,” she adds. “This is primarily due to the readily available materials used in the Runway Safe beds—concrete, MMA coating and Geogrid system. The only unique product is the foam glass which the CDA has stored on-site at Midway.”

We all know there are many months that Chicago is not green in color, but passengers flying through MDW can rest assured they are safe and sound all year round, as if lying on a bed of grass on a spring day.



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RSA RECOMMENDATIONS SIXTY-SEVEN

percent of the 1,000 Runway Safety Areas (RSAs) in need of updating at commercial service airports across the nation have already been improved and meet FAA standards. But that means 33 percent do not meet this standard, and the deadline to do so is fast approaching, The FAA requires commercial service airports to improve these features by year’s end.

The FAA says many of the Engineered Material Arresting System (EMAS) arrestor beds installed prior to 2006 need re-painting to maintain the integrity and function of the bed. ESCO has developed a plastic seal coating for these beds. But another option, available since 2014, to bring these areas up to FAA standards is the green EMAS from Runway Safe.



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Protect the Perimeter

Why all airports need to up the ante for perimeter protection

Security reportedly accounts for 25 percent of an airport's operating budget, with the vast majority concentrated on protecting terminals. Perimeter protection often takes a back seat—far, far in the back. The reasoning is straightforward: While perimeter breaches happen, so far they've mostly only caused reputational damage and some embarrassment.

Since 9/11, there's been tremendous emphasis placed on airport security, and rightfully so. But as time passes, and the memory of this tragedy dissipates, budgets become tighter. And since a perimeter breach has yet to lead directly to widespread human injury or harm, perimeter security remains a lesser priority.

While unsecured perimeters haven't resulted in catastrophic damage, that doesn't mean

they aren't a vulnerability. Airport perimeters span miles and are the largest unmanned areas of airports. Typically security is limited to roving guards patrolling fences, and is sometimes supplemented by surveillance video or other sensors.

In 2012, \$69 million was invested in airport perimeter security measures in the United States. To put this into context, the TSA's total

annual budget for aviation security is more than \$4.9 billion. More concerning, budgets are potentially shrinking. Frost & Sullivan estimates that by 2017, airports will reduce spending on perimeter security to approximately \$47.5 million per year.

Comparatively European airports attribute more resources to perimeter security, said John Hernandez, an aerospace defense senior industry analyst at Frost & Sullivan. But even they are not immune to a breach.

In February 2013, thieves dressed as police officers driving official-looking cars breached the perimeter fence of Brussels Airport in Belgium, and waited for nearly eight minutes while \$50 million in diamonds was moved from an armored security van onto a plane. Once the consignment was loaded, the thieves moved in. It took them only two minutes and 50 seconds to board the plane and make off with the jewels.

PERIMETER BREACHES: NOT UNCOMMON

So far in the United States, perimeter intrusions haven't been as nefarious, but they are plentiful. According to the TSA, there were approximately 25,000 airport perimeter security breaches at U.S. airports between November 2001 and July 2011. Since then, there have been a number of highly publicized incidents.

The most notable perimeter security breach occurred in April 2014 when a 15-year-old boy hopped the fence at Mineta San Jose International Airport, randomly picked a plane, and hid in its wheel well until he arrived safely in Maui. Since then, the San Jose airport has experienced four additional perimeter breaches, the most recent occurring in March.

A similar incident occurred a few years earlier at Charlotte Douglas International Airport in Charlotte, N.C. However, in this case the teenage stowaway fell to his death when the plane's landing gear dropped during the final approach to its destination.

In another example of a perimeter security breach, a stranded jet skier in Jamaica Bay



DOCUMENTED PERIMETER BREACHES

AN ASSOCIATED

Press investigation documented 268 instances in which people hopped over, crawled under, drove cars through or otherwise breached the fences and gates protecting the perimeters of 31 of the nation's busiest airports between January 2004 and January 2015. Here's a look at some of those breaches.

- ▶ **INTOXICATED IN SEATTLE:** In October 2014, a 22-year-old woman drove an Acura through a guarded gate at Seattle-Tacoma International, striking an exiting airport vehicle. She then drove to a terminal gate, near taxiing planes with passengers. Authorities said she and her passenger were visibly intoxicated. "I am so dumb! My mom is going to kill me," she told officers.
- ▶ **DEAD BATTERY IN D.C.:** In July 2008, a Potomac River boater's battery failed, so he paddled to shore and jumped fencing at Washington's Reagan National to go through a secure area and reach his vehicle to charge the battery. He went back over the fencing and reinstalled the battery.
- ▶ **CHARLOTTE STOWAWAY:** In November 2010, a 16-year-old reached a parked airplane at Charlotte Douglas International in North Carolina and hid in the wheel well. He fell when the landing gear opened on approach to Boston and his body was found in a suburb. Authorities never determined how he reached the secure area, but many investigators believed he climbed a tree with a branch that hung over a perimeter fence.
- ▶ **TICKETLESS IN ATLANTA:** In August 2012, a man who ran past a security guard near a cargo area at Hartsfield-Jackson Atlanta International dashed across two runways before tug drivers spotted him and called police. He told authorities that he was supposed to be catching a flight to Detroit, but he had no ticket—just \$3.50 and a phone charger.
- ▶ **STOWAWAY SURVIVOR:** In April 2014, a 15-year-old boy who hid in the wheel well of a Hawaiian Airlines jet and survived a flight from California to Hawaii told police that he had scaled a security fence at Mineta San Jose International. Police couldn't find where he had done so, and video cameras did not capture the breach.
- ▶ **FLORIDA FENCE DIGGER:** In September 2014, a man dug under a fence at Orlando International, crossed a tarmac and climbed into a JetBlue plane's wheel well, where he remained for hours. Eventually, he was arrested.
- ▶ **NO I.D. IN MIAMI:** In August 2007, a man drove toward a security gate at Miami International, pulled out a picture of Jesus for his identification and told the guard

to call police if he wanted. The man then drove onto the airfield, where he was chased down by officers and arrested.

- ▶ **NEAR COLLISION IN PHOENIX:** In April 2006, a pilot told air traffic controllers at Phoenix Sky Harbor International that he nearly collided with a man on the runway as he was about to take off. The suspect was arrested, and told authorities that he jumped the fence to take a shortcut — as he had three days earlier without being caught.

—Source: Associated Press

Frost & Sullivan estimates that by 2017, airports will reduce spending on perimeter security to approximately \$47.5 million per year.

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swam to shore, and climbed the eight-foot perimeter fence of John F. Kennedy International Airport. He walked across two runways and passed several security cameras and motion detectors before being spotted.

PERIMETER SECURITY CHALLENGES

There is very little consistency in the way perimeter security is handled. The TSA is responsible for ensuring airport operators adhere to an appropriate security plan that meets federal standards, but perimeter security is primarily the responsibility of airport operators. Despite implementing activities to assess airport perimeter risks, the TSA failed to conduct perimeter vulnerability assessments for 87 percent of the nation's 450 commercial airports, according to a 2009 Government Accountability Office (GAO) report. This exemplifies the lack of attention given to perimeter security.

The sheer amount of space airports occupy poses a significant perimeter security challenge. For instance, Mineta San Jose International

Airport is one of the country's smaller airports, and its perimeter is about five miles long. The perimeters of Los Angeles International Airport and Dallas/Fort Worth International Airport are approximately 10 and 20 miles long, respectively, while Denver International Airport's perimeter spans more than 29 miles. Combined, the perimeters of all U.S. airports nearly equal the length of the U.S. border with Mexico—a border for which security expenditures approach a billion dollars annually.

Most airports don't have an operating perimeter intrusion detection system in place, so airport security and management only find out about a breach after it occurs.

There are hundreds of different sensors and systems airports can use to protect the perimeter, but they don't come without challenges. For example, weather and natural elements often prohibit the use of certain sensors without environmental filters due to a high false alarm rate.

Some airports use multiple detection methods, but using multiple systems can be problematic because they generally work in isolation. Each sensor can provide some information, but it often fails to provide

AP Q&A: PERIMETER SECURITY

A YEAR AGO, 15-year-old Yahya Abdi climbed the fence protecting the airport in San Jose, Calif., hoisted himself into a parked plane's wheel well and survived a long, freezing flight to Hawaii.

While it was not the first report of a perimeter security breach at a major U.S. airport, there was no easy way to establish how frequently incidents occur. Airports do not like to reveal breaches, and the TSA, which is supposed to catalog them, would not divulge what its records show.

So the Associated Press began digging. Many airports fought against releasing these records, but, eventually, a picture emerged. Here are some of the questions and answers about what the AP found.

How many times have airport perimeters been breached?

Every year, people reach secure areas of the nation's airports by defeating fences, cameras and remote sensors. Some linger for hours before they're discovered, or reach planes on runways or parked at gates.

From Jan. 1, 2004, through Jan. 31, 2015, the AP found 268 perimeter breaches at the nation's 30 busiest airports, as measured by passenger traffic, and the one in San Jose. Because several airports didn't have data going

back that far and four refused to release any information, citing security concerns, the total number is surely higher.

Four years had more than 30 breaches each: 2007, 2012, 2013 and 2014. The most was 38, in 2014 and 2012; the fewest 12 in 2009.

Among the 268 total breaches, just over half involved people who hopped over or wriggled under fences, slipped through gates or past guardhouses, or were found on foot inside a secure area. About one-quarter involved drivers who smashed into fences or drove through security gates. The rest were incidents for which airports did not provide enough information to determine exactly what happened.

Why is it significant?

While none of the breaches AP found involved a terrorist plot, people with weapons or a history of violent crimes have been caught. A nightmare scenario haunts airport and other public officials: A terrorist could steal onto a parked plane and plant a bomb.

What airports had the most incidents?

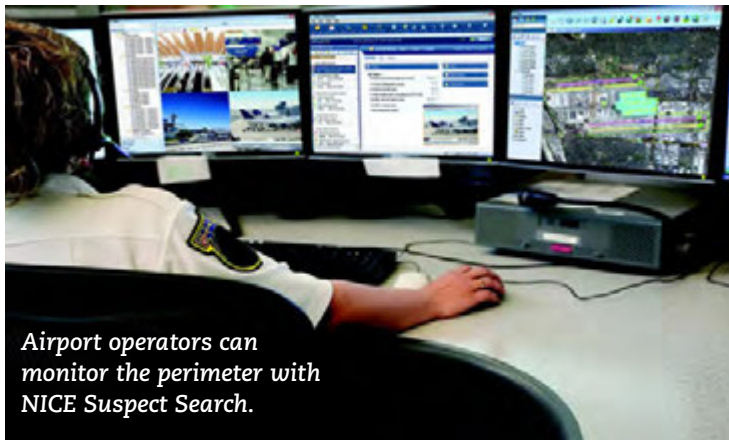
Seven airports in four states accounted for more than half of the breaches. San Francisco International reported 37. Philadelphia International: 25. Los Angeles International: 24. McCarran International in Las Vegas: 21 (though its records check went only to the start of 2009.) Mineta San Jose International: 18. Miami International: 14. And Tampa International: 13. In Los Angeles, one man accounted for eight breaches between April 2012 and March 2013.

Four airports declined to provide information about perimeter breaches. They were Boston Logan International and three run by the Port Authority of New York & New Jersey: John F. Kennedy International, Newark Liberty International and LaGuardia.

What happened to the intruders?

At least 140 of the 268 incidents resulted in arrests or citations. AP did not track whether people were prosecuted. Some people — notably lost drivers — were released with no punishment. In other cases, there was not enough information to determine whether the person was punished.

—Source: Associated Press



Airport operators can monitor the perimeter with NICE Suspect Search.



the complete picture needed to accurately assess the situation.

For example, thermal imaging cameras or radar can indicate if something is at the perimeter, but don't identify what or who that something is. Similarly, a fence shake detector can be helpful, but when the system sounds the alarm it doesn't provide insight into what's causing the shaking. Cameras with video analytics can also be effective, but there's no way to completely eliminate false alarms.

A MULTIFACETED APPROACH

Perimeter protection requires a multi-layered approach, including a Physical Security Information Management (PSIM) technology that can correlate incoming information from various perimeter intrusion detection systems and provide a higher level of situational awareness. For example, how can airport security determine whether an alarm from a fence shake detector is a gust of wind or something more serious? PSIM combines the fence shake alert with a video analytics alert so airport security can have a high level of confidence that a perimeter intrusion is real. And, the PSIM system can put information together in real time, so security staff can be appropriately alerted and respond accordingly.

Miami International Airport has taken an innovative, multi-layered approach to perimeter security and combined its existing technologies, such as tower radar, video management, and video cameras, with newly purchased ground radar, vehicle GPS tracking, and various low light/fixed thermal/PTZ tracking cameras. A PSIM solution pulls information from all of these sensors together and provides analytic and visualization capabilities that help security

more accurately identify, locate, and confirm unidentified targets that could pose a threat. This approach also allows the airport to leverage its existing investments in security technology more effectively by integrating siloed systems into a cohesive solution.

Airports can take this a step further with new video analytics applications, such as NICE Suspect Search, that allow security staff to track down an intruder once a perimeter breach has been detected. Suspect Search integrates with video surveillance, including PTZ cameras, and PSIM. Using an image captured from a video camera or a user-generated avatar, the application automatically searches through video across all of an airport's surveillance cameras and displays possible matches of the intruder in seconds. Once the intruder has been identified, his or her movements are recreated on a map so airport security personnel can visualize the intruder's route and last known location.

Just because the impacts of perimeter security breaches to date haven't been widespread or catastrophic doesn't mean perimeter security should be put on the back-burner. Airports must take a multi-layered, proactive approach to perimeter protection. Fortunately, the technologies exist to make security efficient, and even cost-effective, with the ability to leverage existing systems.

ABOUT THE AUTHOR

Rony Vexelman, NICE Systems' Security Division
Rony Vexelman is product marketing and marketing operations associate for NICE Systems' Security Division. He has close to half a decade of experience in the security industry.

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How to Enhance Security and Improve Baggage Handling

The TSA's three-tier approach to screening, combined with sorting technologies developed in the retail sector, could be the basis for a transformation in the way baggage is handled by U.S. airports.

Balancing the need for security screening against the fast and efficient handling of baggage is a constant challenge for airports of all sizes. The TSA introduction of pre-screening of passengers for expedited, standard or enhanced security processing will enable airports to take a more holistic view of the entire baggage handling process and to combine enhanced safety with an improved baggage handling efficiency and throughput.

Taking a holistic view helps unlock new efficiencies and cost-savings which may not be possible with segmented approaches which consider pre-security and post-security as two independent stages. An end-to-end review, however, requires that the airport, security services, ground handlers and baggage system integrators consider every aspect of how bags arrive at the right plane, at the right time.

The TSA's three-tier approach to screening, combined with sorting technologies developed in the retail sector, could be the basis for a transformation in the way baggage is handled by airports throughout the United States.

In the United States, baggage screening is typically carried out in a number of separate screening locations throughout an airport. The reasons for this are understandable: most airports were built before the need for heightened security and so the screening process has been retro-fitted to the existing terminals and infrastructure. Often, the logical way to do this was to create three or four standalone security centers. This configuration minimizes the time that baggage has to spend on a conventional conveyor between the two main sections of the baggage handling process: from check-in to security screening and from screening to make-up.

Using multiple screening locations, however, means that each location needs sufficient screening capacity to cope with peaks in demand, and then additional screening

machines to provide redundancy. In addition, the space allocated for these screening areas is real estate that airports cannot use for other purposes. The replacement of multiple screening areas with a centralized area, fed by a high-speed tote transport system, offers a number of advantages, including a reduction in the number of screening machines that are

required to provide the same capacity and 100 percent traceability of all baggage.

FIFO

The conventional approach to baggage handling is essentially a First-In, First-Out (FIFO) process. As bags are checked in, they are screened and sorted to their proper destination.

This approach means that passengers have a fixed time-slot of about three hours before which they are not able to check in their luggage. During this time the loading gate for each individual flight has to be staffed by operators waiting for the next item of baggage to arrive on the departure carousel, together with bags for other flights, before loading the right bag onto the right ULD. Of course, some flexibility is provided by an "Early Baggage Store," which allows the baggage from the earliest passengers to be held pending loading onto the flight, but the process is essentially still one of pushing individual items of baggage through the system.

A comparison of the process used by the retail sector reveals the inherent inflexibility in the conventional baggage handling process.

The retail sector has developed processes to manage the high-speed, high-capacity sorting needed to provide next-day delivery of



BEUMER Corporation

The replacement of multiple screening areas with a centralized area, fed by a high-speed tote transport system, offers a number of advantages, including a reduction in the number of screening machines that are required to provide the same capacity.

thousands of individual line items to thousands of customers around the world. A simple FIFO process would simply not provide the level of flexibility and speed that is essential in this highly competitive market. Instead, retailers use sophisticated warehousing technologies which can pick, sort, batch and dispatch individual items as they are pulled from storage by customer demand.

If this process is applied to baggage handling, the baggage is no longer “pushed” through the check-in, security and make-up process, but it is “pulled” by the ground handler for batch-loading onto the specific flight.

This new approach certainly requires a change in technology as well as philosophy, but the result is a baggage handling process which is faster, more secure and more flexible, both for the airport, the airlines and the passengers.

BAGGAGE WAREHOUSE

The inherent flaw in the conventional baggage handling process flow is that the ground handlers have virtually no control over the number of bags received at check-in, or the number of arrival and departure flights. The best that can be expected from this push-fed approach is that baggage flows smoothly through the system with as few delays or lost bags as possible.

The concept of the holistic baggage handling system, however, turns this around by creating a baggage warehouse as a buffer between the in-feed from check-in and the out-feed to the loading gate.

The process starts with automated bag-drops. These allow passengers to check-in their baggage at any time, rather than be restricted to a three-hour time-slot before the departure of their flight. At the self-check-in the passenger receives their boarding card and an IATA barcode tag to attach to their baggage before it is weighed and placed in an individual tote. The baggage tag is coupled to the embedded RF tag on the tote and the bag remains in the same tote through-out the complete check-in to security, and security to make-up process.

The holistic approach to baggage handling uses the concept of the Early Baggage Store and adds new capabilities to transform it into a baggage warehouse.

The bags which arrive from check-in are still in their assigned totes and they remain in-tote as they are held in this warehouse. As each



If a retail industry process is applied to baggage handling, the baggage is no longer “pushed” through the check-in, security and make-up process, but it is “pulled” by the ground handler for batch-loading onto the specific flight.

flight approaches its scheduled loading time, the ground handling operator enters the number of the next departing flight and the control system identifies and retrieves the bags for that flight and transports them to the queuing lane for loading. Bags which have been checked-in closer to the flight departure can be flagged up as a priority to the centralized security section and called directly to the queuing lane as soon as they clear security. The ability to identify and prioritize bags which are required for imminent departures means that a higher percentage of bags will be successfully loaded onto the correct flight.

The function to call-up individual bags to create flight-specific batches of around 40 bags per batch means that the ULDs or carts for each flight can be speed-loaded, which has a significant impact on productivity. In the conventional system a member of the ground staff team would be in attendance at the gate throughout the three-hour loading period. With the flexibility provided by the baggage warehouse, the ground handler simply opens the position and speed-loads the batch of bags onto the ULD or cart before closing the position and moving onto another task.

The role that the baggage handling system integrator plays in coordinating efficiencies throughout this baggage handling value stream is crucial. Detailed analysis of every aspect of the entire, coordinated baggage handling process is the only way to ensure the most effective reductions in cost, improvements in handling efficiency, and the highest levels of safety in the working environment. The combination of a high-speed transport and sortation system, with a high-capacity baggage warehouse, solves the speed, tracking, storage and security challenges in one simple, end-to-end system.

ABOUT THE AUTHOR

Henrik Cort,

Beumer Corporation

Henrik Cort began working in the airport baggage handling industry in 1997 when he joined Crisplant, a member of the BEUMER Group.

Since 2011, Cort has held the position of director of airport sales for BEUMER Corporation in North America, also part of BEUMER Group. The BEUMER Group designs, engineers, manufactures, installs and commissions security and sortation baggage handling systems.



Airport Wireless Networks Get S.M.A.R.T.

Boingo introduces tiered WiFi model to improve analytics and the traveler experience



Today's travelers are more connected than ever before, and have high expectations for connectivity on the go. Evaluation of more than 75 of the world's most highly trafficked airports where Boingo Wireless manages WiFi services revealed some key and growing trends underpinning the data demand and device proliferation at airports.

Those trends have created a quantum shift in the way that new networks are designed and existing networks are upgraded. The industry needed to reimagine the connected passenger experience and ultimately this led to Boingo's introduction of the **S.M.A.R.T.** WiFi network, which stands for Secure, Multi-platform, Analytics-Driven, Responsive and Tiered.

A revolutionary network approach to delivering super-fast and personalized connectivity options, S.M.A.R.T. network deployments include multiple classes of WiFi services aimed at unique user/application profiles, allowing the network to intelligently manage the various types of usage across a public WiFi network. A typical S.M.A.R.T. network may include the following classes:

- **Complimentary WiFi**, providing users the ability to handle "basic" connectivity requirements, such as e-mail and web browsing. Depending on the venue, this level of service could be supported by advertising or sponsorship.
- A **"Turbo Boost"** premium tier of service, available for power users who want to stream media.
- **"Enterprise WiFi"**, a super-fast tier of service designed for frequent business travelers who need the airport WiFi network to function as an enterprise tool.

GET SMART WITH S.M.A.R.T.

Aligning differing application, user and usage profiles within a single WiFi environment requires a reimagining of the network from the ground up. Conventional network thinking surrounds "throwing bandwidth at the problem," and in the WiFi world, "throwing access points (APs) at the problem" when connectivity issues arise. In fact, capacity is only part of the challenge, and in today's dynamic mobile application world, WiFi networks need to be equally responsive to changing needs. The needs of travelers vary greatly between leisure passengers seeking access to social media, compared to business travelers that need airport WiFi to serve as an extension of their workplace network. S.M.A.R.T. networks improve customer satisfaction and ensure operational efficiency, cost management and monetization opportunities for airports because they are built to prioritize a wide range of application requirements for both passengers and venues across a high-capacity infrastructure.

According to MMGY Global, travelers that carry at least two devices represent a third of all passengers today. Serving the increasing demands and changing needs of air travelers means airports need to think outside of the box to meet speed, service and data demands. S.M.A.R.T. networks help airports navigate this challenge with network insights, location based service (LBS) options, responsiveness and scalability while providing more choice and security for passengers.

Airports are also increasingly reliant on non-aeronautical revenue. S.M.A.R.T. networks deliver additional opportunities for monetization with ad-supported complimentary WiFi, keeping end-users happy as well as helping airports protect the bottom line. Similarly, location-aware design measures traffic flow and location throughout the network, providing actionable analytic insights to airports to optimize the in-venue experience of concessions.

INSIDE S.M.A.R.T.

At the heart of S.M.A.R.T.'s flexibility is Boingo's proprietary software-defined network (SDN) and network functions virtualization (NFV) technology. Driving responsiveness to key network processes, SDN and NFV cloud-based network management is built on industry-standard hardware, delivering scalability while adapting to user demands and agility in managing multiple network functions. A new way of deploying network infrastructure, SDN supports the network automation to orchestrate traffic flow while NFV focuses on the services required to align with the virtualized environments they are supporting. The advancement of these technologies encourages networks to keep pace with innovation.

Specific to connectivity and credential security, end-users concerned with public WiFi network protection need not worry as all S.M.A.R.T. networks are enabled with Passpoint technology, a powerful new wireless industry standard that makes connecting to WiFi as easy and secure as cellular. Passpoint supports WPA2 (Wireless Protected Access 2) encryption standards, providing enterprise-level security while employing security configurations that protect the core network.

Now available for airports worldwide, the first S.M.A.R.T. network installations launched in select U.S. airports in the first quarter of this year.

Ultimately, S.M.A.R.T. networks are built for the future based on their design to scale for consumer data, application, operational and customer support needs. Boingo's converged design for airport WiFi promises that wireless infrastructure can extend state-of-the-art services to travelers without sacrificing the fundamental need for speed and capacity.

ABOUT THE AUTHOR

Marc Patterson, Vice President of Products, Boingo Wireless

Marc Patterson is responsible for the overall specification, development and management of Boingo's diverse mobility portfolio, including Boingo's WiFi, small cell/Distributed Antenna System (DAS), S.M.A.R.T. networks and Boingo Broadband services, as well as the company's web and mobile applications. Patterson brings more than 25 years of customer-focused, market-leading service development experience in wireless, mobility and security to Boingo.

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Amadeus Acquires Air-Transport IT Services Inc. (AirIT)

The addition of U.S.-based provider of airport technology solutions will allow Amadeus to tap into biggest airport IT market

Amadeus' Airport IT business acquires AirIT, previously wholly owned by Fraport AG. It is Amadeus' second acquisition of well-established airport industry players in the past 15 months.

With this acquisition, Amadeus significantly expands its presence and its capabilities to serve the North American market. AirIT's solutions are used by 30 of the top 50 busiest airports in the United States including Atlanta, Dallas, Los Angeles, Miami and Charlotte. AirIT complements Amadeus' business with a strong customer base that encompasses more than 115 airlines and 120 airports predominately in the United States, Canada and the Caribbean.

Airports often seek property and revenue management systems in conjunction with air-

port management systems. This acquisition will allow Amadeus to be more responsive to those customer needs outside of North America by combining its existing airport management solutions with the AirIT PROPworks portfolio, a property and revenue management solution for airports of all sizes that allows for management of contracts, invoices, sales, tenants and more. PROPworks is already used by four of the five busiest airports in the United States.

John Jarrell, head of Airport IT for Amadeus, says: "As the pace of recovery picks up over the next few years, the North American market, already the biggest airport IT market in the world, will represent an enormous opportunity for growth. With this acquisition, Amadeus accelerates the expansion of its Airport IT busi-

ness in the region, gaining both a solid customer base and a highly experienced team, to provide innovative solutions to our customers."

The AirIT team looks forward to the new partnership, reports Betros Wakim, CEO of AirIT. "We share a similar culture of innovation," he says. "This fact is exemplified in our passenger processing solutions. The Amadeus' ACUS solution and the AirIT EASE platform both demonstrate industry-defining contemporary approaches to delivering airline common use. There are synergies between the two companies, which will further enhance our ability to deliver complete end-to-end solutions to our customers. With our combined offerings, expertise, and infrastructure, we believe that we will have the opportunity to serve our customers even better."

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LAX STORMWATER PROJECT TO PROTECT SANTA MONICA BAY

Mayor Eric Garcetti today signed an agreement finalizing an estimated \$40 million stormwater treatment project that will clean polluted Los Angeles International Airport runoff before it is released into Santa Monica Bay. The stormwater capture facility will be built underground, requiring the excavation of a 5-acre empty parcel that the city will then convert into park space. LAX runoff is currently sent untreated into the ocean via what is essentially an open ditch. The project will collect the airport's stormwater and send it through a newly constructed connection with the city's Hyperion Water Reclamation Plant or pump it into underground infiltration galleries to recharge the groundwater basin.

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The reduction of ozone emissions at airports due to environmental projects paid for by VALE grants.



JOHN S. PISTOLE
Former TSA Administrator, Awarded NATA's William A. "Bill" Ong Memorial Award

"We must re-imagine our relationship with water. We must be responsible with how we treat it, across its entire cycle. We can no longer afford to let stormwater run off as pollution into our ocean. We must clean it, we must capture it, and we must put it to good use."

L.A. MAYOR ERIC GARCETTI

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Dates for the Airports Going Green Conference in Chicago.

"There are only a handful of airports that have ... pretty comprehensive [sustainability] strategies, though more are starting to look at it."

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