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Joe Petrie
Editor-in-Chief

United in Success and Failure

When one crisis communication plan fails, the entire industry loses.

So I originally wrote a column for you about a recent experience getting stranded in an airport that kicked off a 36 hour saga that entailed two airlines, five cities, four airports and zero hotel rooms and relating it to the importance for preparations for mass cancellation. It would've made you laugh, been a little entertained and maybe provided some perspective from the passenger side of a major delay.

However, I had to scrap that column because as we were putting together the Airport Business daily newsletter recently, I was struck by a headline that really hit me:

"Nobody Dragged From Oversold Boise Flights, Airport Says"

April hasn't been kind to United Airlines on a public relations front. First the outcry from the leggings incident, then the viral video of a man being dragged from his seat because the flight was oversold, followed up with some company statements that ended up fanning the flames even further.

While the incident took place in Chicago, local media outlets across the nation were aflutter with local stories about any potential incidents. I've never flown out of Boise, but I'm willing to bet no one getting forcibly dragged from a flight is a pretty regular thing and therefore shouldn't be news. However, when a major incident happens, the questions will roll right back at you because all news is local.

If you have a communications department at your airport, I'm willing to bet each one of them fielded at least one phone call from a media outlet asking about the United incident. Some blame an overzealous press, but as someone who used to work in newspapers, I assure you the only reason reporters called is because they were hit with multiple calls from people in your community alleging all sorts of incidents they claim took place at your facility or on flights from your airport.

Great public relations are more crucial than ever for the aviation industry. There is a whole host of issues right that could fundamentally change the industry.

Best practices on the ground stop incidents, but public communications contains a crisis. Keep an eye on your crisis communications plans and make sure your administration is speaking to the public and not the industry.

After all, it only takes one incident and a poor plan at one facility to create a new slough of regulations for everyone else.

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By Jody Summers

Elevating the Local Customer at CLT

Elevated roadway and terminal curbfront project increases landside capacity, puts Charlotte Douglas a step closer to its goal of providing a top-notch experience.

Jack Christine has a good problem on his hands. He is chief operating officer for Charlotte Douglas International Airport (CLT), which has seen a 7 percent increase in local enplanements in each of the past three years and a doubling of total passengers in the past 15 years. CLT is the ninth largest U.S. airport in terms of passengers served, according to Airports Council International.

But with growth comes challenges.

"The increased local demand has strained our pre-security facilities like parking, terminal curbfront roadways and the terminal lobby," Christine said.

To address those needs, the airport has been checking off projects on its master plan, part of Destination CLT, a 10-year, $2.5 billion capital improvement program of capacity enhancements that include concourse expansions, a fourth parallel runway, a new elevated terminal curbfront roadway and pedestrian tunnels, and a terminal lobby expansion. "The story of CLT's future terminal expansion goes back to 2006 when HNTB Corporation was hired as a subconsultant to help plan Charlotte's landside and create space for growth. The outcome was a concept and subsequent design of the relocated, widened two-level curb and a new parking deck, providing 7,000 public parking spaces and rental car ready/return," said Bill Lebegern, PE, HNTB aviation project director, Carolinas District and associate vice president.

The Elevated Roadway and Terminal Curbfront project is scheduled to wrap in August 2018, nearly one year ahead of the initial July 2019 contract date. HNTB Corp.

Destination CLT is a 10-year, $2.5 billion capital improvement program of capacity enhancements that include concourse expansions, a fourth parallel runway, a new elevated terminal curbfront roadway and pedestrian tunnels, and a terminal lobby expansion. HNTB Corp.

Completion of the parking decks set the stage for the massive Elevated Roadway and Terminal Curbfront project now underway. Every penny of the nearly $50 million project is being paid with passenger facility charge pay-as-you-go funds approved by the Federal Aviation Administration (FAA).

The city-owned and -operated airport is in a very strong and self-sufficient financial position, a fact Christine is proud of.

"We currently charge a $3 PFC while many larger hubs charge the maximum: $4.50," Christine said. "That generates enough revenue for us to fund portions of our capital program that are PFC-eligible for our foreseeable future."

And, for CLT that future holds more growth. The Airport is forecasted to serve 9 million annual originating passengers by 2027, 3 million more than it does now.

BRINGING ORDER TO CLT'S FRONT DOOR

One of CLT's main landside pain points is the highly-congested area in front of the terminal building.

"Long traffic queues for loading and unloading at the curb have been a constant challenge for us over the past several years," Christine said. "The Elevated Roadway and Terminal Curbfront Project will relieve congestion by increasing roadway and curbside capacity, and it will create space for the terminal ticket lobby expansion by physically moving the curbfront 80 feet away from the terminal."

The airport is replacing the existing upper three-lane terminal roadway with parallel roadways, for a total of eight lanes for departures. It also is replacing the existing five-lane, ground-level terminal roadway with another eight lanes in two roadways for arrivals, bringing the grand total to 16 new lanes. Commercial vehicles will be moved to the three-lane roadways closest to the terminal and private vehicles to the outer lanes, resulting in less pedestrian traffic crossing the travel lanes.

"The Elevated Roadway and Terminal Curbfront project allows us to separate commercial and private vehicles on the upper level, which we've never been able to do, and bring some order to the front door of the terminal," Christine said.

Additional features of the bi-level roadway include:

- Curbside valet drop-off and pickup lanes
- Raised crosswalks to increase pedestrian visibility and safety
- The structural portion of two future pedestrian tunnels, connecting the parking deck to the terminal under the arrivals roadway
- Provisions for future pedestrian bridges from the parking deck to the terminal

CLT retained HNTB to design and manage construction of the Elevated Roadway and Terminal Curbfront Project in the heart of the airport while maintaining 24/7 roadway access to the terminal.

"The fact that we were involved in all phases gave the project a continuity of understanding from planning through design and construction," Lebegern said.

In delivering the complex landside project, HNTB was committed to helping the airport achieve its No. 1 goal.

"We are looking out for the customer's best interests," said Tom Rossbach, HNTB director of aviation architecture and vice president. "Our job is to ensure passengers continue to enjoy the highest level of service possible."

NOT YOUR TYPICAL ELEVATED ROADWAY

Described as a combination roadway-bridge-building-tunnel project, the effort summoned nearly every in-house discipline HNTB offers.

"The only thing missing is rail," joked Greg Boulanger, PE, HNTB project manager and associate vice president, Carolinas District.

The elevated roadway required a building permit because it would provide shelter for pedestrians and connect two buildings: the terminal and the parking deck. But, the elevated roadway also was, in all respects, a bridge. And, for Paul Barber, PE, HNTB senior bridge engineer, it was one of the most complex in his 35-year career – not from a technical perspective so much as from a geometric standpoint.

"The framing system for the bridge is completely different from a normal highway bridge, yet we were designing it for complete highway truck loadings," Barber said. "We placed extremely low-depth, long beams – some 70 feet – perpendicular to traffic when ordinarily, in a highway bridge, the beams are parallel to traffic. We used an inverted T-type substructure along with ledge beams, neither had been used before on a highway bridge, under highway loading, in North Carolina."

The type of precast beam wasn't common in North Carolina, but the 14-foot vertical clearance HNTB had to maintain underneath the elevated structure forced engineers to use a shallow beam for the span length.

"It's not your typical rectangular bridge," said HNTB's Nick Schiavone, resident engineer and construction manager.

To fit the structure into its surroundings, HNTB designed beams that fan out, allowing the elevated roadway to curve toward the terminal building on its approach and curve away from the terminal building on departure.

The project also benefited from the precast beam, an option that wasn't on the table at the beginning, according to Barber.

"The airport didn't want to use steel for supporting members, and it initially was against using precast members because of challenges on previous projects," Barber said.

HNTB recommended the Airport use precast beams for the system and a cast-in-place deck with removable forms instead of steel forms left in place.

"Using precast beams helped with cost, staging and significantly sped up construction," Barber said.

The bridge's caissons had to be driven deep into the ground to support not only the elevated

CLT MOVES FORWARD ON LOBBY EXPANSION

MOVING the curbfront away from CLT's terminal building will create 225,000 square feet of space for the lobby expansion. Design already is under contract and the airport is working through the renovation of all the pre-security space. Most ticketing functions will move to a kiosk-style format in a more expansive area. There will be more concession opportunities, and Queen Charlotte, a popular local sculpture, will find her permanent home as a centerpiece of the lobby expansion.

The lobby expansion will install a canopy, stretching over the elevated roadway from the parking deck to the terminal as well as skywalks linking both buildings.

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roadway but a future 1,000-foot-long canopy top.

"We extended the main columns of the substructure unit up to support the future canopy, which will have a fairly significant wind load," Barber said.

The bridge design ties into existing work and transitions into new work and the elevated portion will accommodate a future ventilation system for pedestrians underneath.

"HNTB did a good job," Christine said. "Their design was cost-effective and allowed for faster construction, despite the extremely confined space we gave them to work in."

CREATING SPACE WHERE THERE IS NONE

In winter 2015, construction crews began the daunting task of shoehorning the new two-level, 16-lane roadway and terminal curbfront into the airport's built environment. The project is bordered on one side by the terminal building and existing elevated roadway, on another side by the new parking deck and on either end by the airside apron. It made for one of the most constrained construction sites the HNTB team has experienced.

"The project is surrounded on all sides," Boulanger said. "We are building a ship in a bottle."

"The challenge was making it all fit within the constraints we had," said Eric Seckinger, PE, HNTB senior engineer. "Not only that, but making each phase of construction fit within a changing set of constraints."

> "By the time we're all done with this and the terminal lobby expansion, the experience for the local passenger will be top-notch."
>
> **JACK CHRISTINE, CHIEF OPERATING OFFICER CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT**

The elevated roadway had to meet the elevations of the terminal's existing upper and lower levels, which meant 14-foot clearance in which construction crews had to work underneath the roadway was tight – so tight, specialized equipment had to be brought in to pave the ground-level roadway. "We couldn't bring in traditional trucks that raise their bodies and dump the asphalt. There wasn't enough vertical clearance," Schiavone said.

Instead, the team ordered specialized paving equipment.

"The contractor used a typical paving machine, but they had to bring in a shuttle buggy and live-bottom dump trucks with conveyors in the bottom," Schiavone said. "The truck body doesn't have to raise but, instead, unloads through the conveyor."

Just getting the large equipment to the construction site requires careful choreography.

"Even something as routine as moving a crane is worked out with the Airport in advance, so we don't impact airport operations or inconvenience customers," Lebegern said.

HNTB works tirelessly with the Airport and the contractor to identify slower days and times for material deliveries and maneuvering heavy equipment.

"We have a staging area about a mile away from the construction site and at night, any time after 11 p.m. and before 5 a.m., we bring in our larger equipment and materials, so we don't disrupt Airport operations," Schiavone said.

"HNTB has done a great job keeping the contractor on schedule, moving along and helping them identify the resources they need to stay productive," Christine said. "All that, from a construction perspective, especially, has gone really well. We are really happy with where we are."

DIRECTING THOUSANDS OF PEDESTRIANS A DAY THROUGH THE SITE

"The project is being built next to and over the top of customers getting in and out of the parking deck and in and out of vehicles at curbside," Lebegern said. "You add construction to curbside congestion, and you have to do a really good job of making sure you don't make it any worse than it already is."

About 10,000 people a day walk through the construction site on their way to the terminal or parking decks.

"Getting passengers through our work zones safely and timely, so they don't miss their flights, has been the biggest construction challenge," Schiavone said.

CLT, HNTB, and contractors carefully plotted construction sequencing and the pathways that would allow customers to safely find their way.

"As we construct the roadway, we move the walkways in a systematic way, so the customer feels some level of consistency and customer service," Christine said.

The team even developed a creative use for shipping containers, converting them into makeshift tunnels to give pedestrians protective passage through the construction site.

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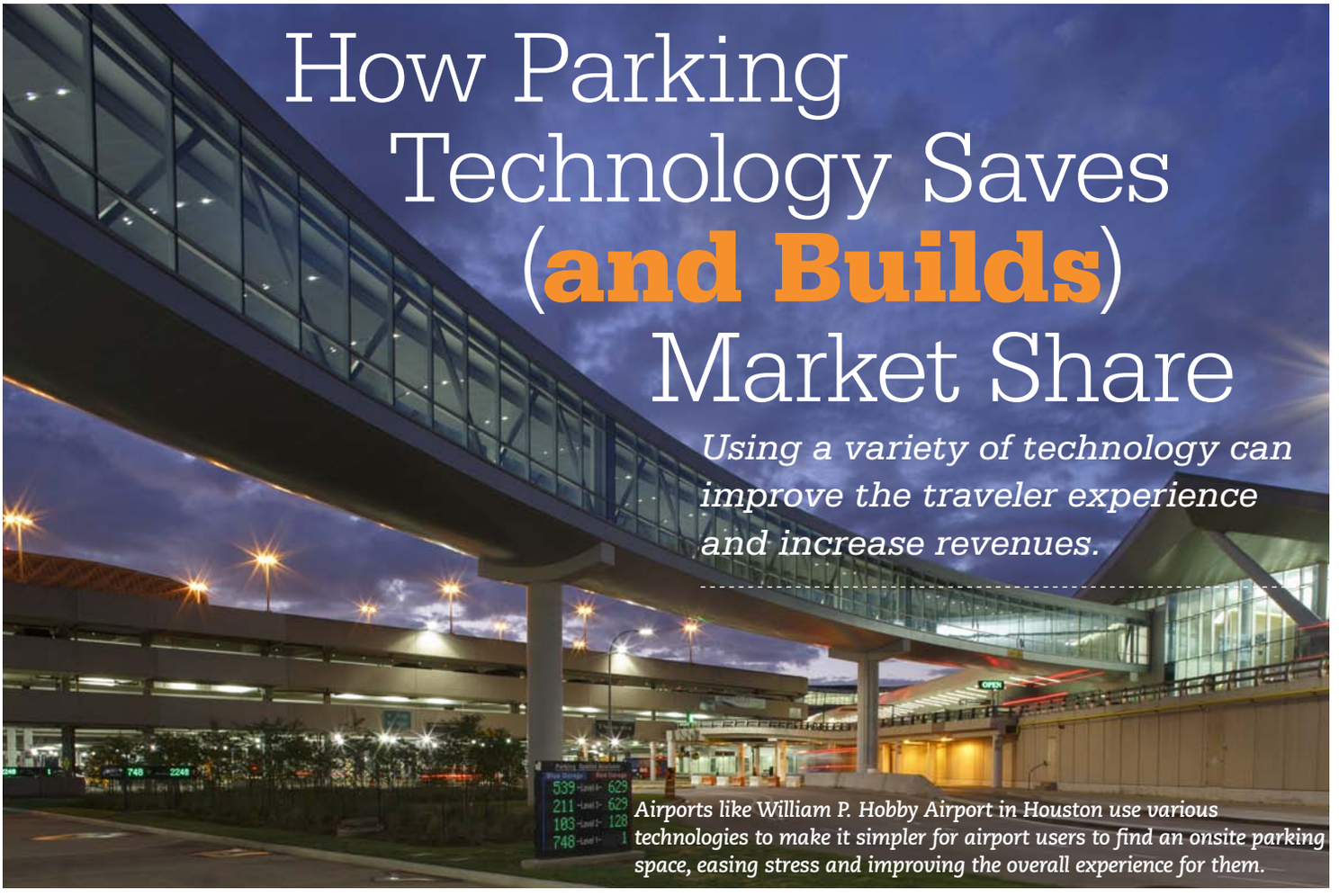
ABOUT THE AUTHOR

Jody Summers is a freelance writer based in North Kansas City, Missouri.

By Dan Kupferman

How Parking Technology Saves (and Builds) Market Share

Using a variety of technology can improve the traveler experience and increase revenues.



Airports like William P. Hobby Airport in Houston use various technologies to make it simpler for airport users to find an onsite parking space, easing stress and improving the overall experience for them.

Imagine removing the stress associated with driving to the airport: no more worrying if you'll find a space or how much time it may take. Parking is not only the first and last impression for airline customers, it's also a major — if not the major — non-aeronautical revenue stream for most major airports. It's no coincidence that technological advances have made parking easier for motorists and more profitable for owners. How is that happening? Read on.

WAYFINDING AND AUTOMATED PARKING GUIDANCE SYSTEMS

What if you could tell each of your customers how crowded every one of your garages and lots are before they leave home? As they drive to your airport, imagine telling them that a parking garage just filled up and how many spaces are available at each of the other facilities. When they arrive, you inform them how many spaces are available on each level and then direct them to a specific available space. Too labor intensive? Actually, you're doing all this without any staff.

An automated parking guidance system (APGS) is an information network that provides real-time information about space availability and directions at every stage of the parking experience. Magnetic loops, ultrasonic sensors, license plate recognition cameras and/or digital

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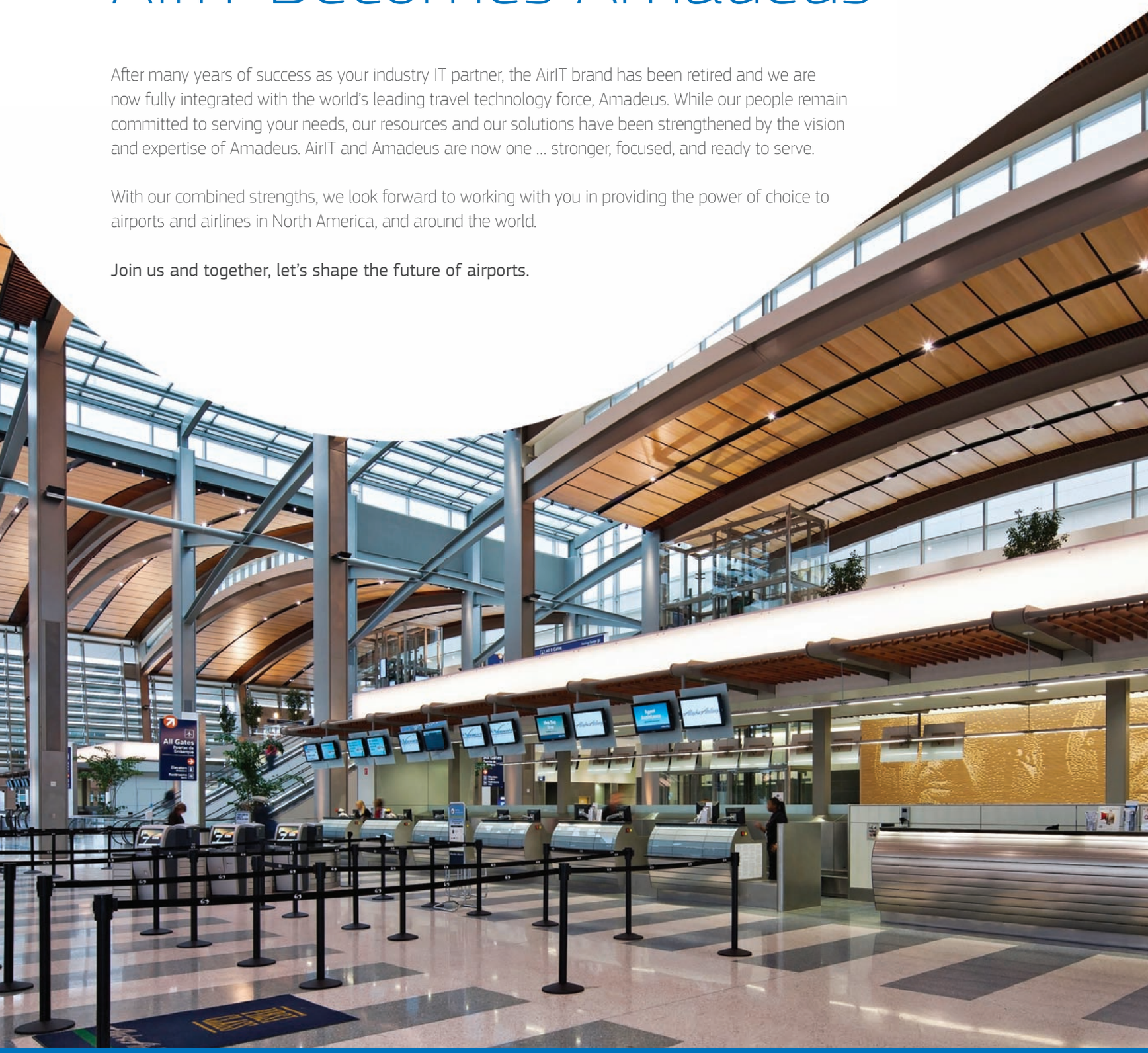

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imaging technologies are used to monitor and calculate space availability and display that information on dynamic signs, websites and mobile apps. There are three levels of detail:

- Facility counts. As a driver nears the airport, dynamic signage displays real-time space availability and directional arrows for each of the parking facilities. If a garage is full, the parker won't waste time driving to it. Parking rates or other messages may also be displayed.
- Level counts. At each garage, a sign displays the number of available spaces on each. As parkers approach each level, another sign will display the number of spaces on both that level and the next one. "Hmm," the parker thinks, "only five spaces here, but 135 on the next level. I'm going to the next level."
- Individual space monitoring. Green lights are displayed above every empty parking space. When a car pulls into a space, the car is detected and the light turns red. Other colors are available, such as blue for handicapped or amber for reserved. Drivers approaching a row of spaces know to bypass that row if there are no green lights. Dynamic signs with arrows strategically placed at key decision points such as intersections will let them know how many spaces are available in each direction, enabling parkers to easily locate available parking spaces even when there are only a few spaces available.

When license plate recognition (LPR) cameras are used, vehicle locations are recorded, providing benefits such as lost car assistance. Other benefits include license plate assigned (reserved) parking areas for employees or VIP customers and the ability to set location-based parking rates. System software will report trespassers. LPR also enables owners to accurately calculate fees for lost tickets (more on this later). Thanks to wayfinding and APGS, your customers may never again miss a flight because they couldn't find parking. If you could choose between two airports and only one had this feature, which would you pick?

MOBILE APPS AND RESERVATION SYSTEMS

There are more than 4 million mobile applications (apps) out there — you probably have some on your phone. I have parking apps on mine and so do your customers. You can send all the parking information described above to your customers in real time.

Red and green lights above spaces at Bill and Hillary Clinton National Airport in Littlerock, Arkansas, allows drivers to see if any available spaces are in a row as they approach.

Why stop there? Parking reservation systems allow motorists to reserve and pay for parking via the internet or a mobile app. Having a guaranteed space makes it even easier for airport customers to determine how much time to allocate for parking.

Mobile phones can replace parking-gate tickets in facilities. You do this at the gate in the terminal — why not the parking gate? After making a reservation, motorists can receive a QR or bar code that when waved in front of a reader at the entrance, sends a wireless signal to raise the gate. This is repeated at the exit, where the fees are calculated and charged to the credit card on file. License plates and credit cards can also be used to match the car or parker with a reservation.

Off-airport operators have used reservation systems for years, attracting potential on-airport parkers before they get to the airport. Many people research parking by searching their airport and the word "parking." When they do, off-airport parking usually appears before on-airport parking. This is not random, alphabetical, or geographical. A good reservation system manipulates key search words and search engine optimization so that facilities offering reservations appear at or near the top of the search page.

Reservations capture contact and travel information for marketing purposes. The systems can also incorporate information about frequent-parker programs and other discounts that are designed in order to build customer loyalty for the parking provider.

Airports in Europe not only offer air and parking reservations online, but also reservations for hotel rooms, car bookings and marketing opportunities for other airport-related services such as restaurants and retail outlets. Why let Orbitz have all the fun (and the business)?

TICKET AND AUDIT CONTROL VIA LICENSE PLATE RECOGNITION

Airports host a lot of long-term parkers, which equates to larger parking fees. If the parker is gone for a number of days or weeks, there is a greater chance of losing his or her parking ticket, which has traditionally been the only documentation of when a car entered the facility. Unfortunately, the honor system doesn't work well here. They say time flies when you're having fun — I suppose that's why motorists tend to think they were parked for a shorter period of time when they guesstimate their entry dates and times.

Operators traditionally take overnight inventories to assist with lost tickets. Staff manually record the license plate of each vehicle to track the number of days it's parked. When a lost ticket is reported, staff refer to the inventory. Some enter the data into handheld devices to record the data and some of these devices can digitally scan license plates. This works moderately well, but it's time consuming and labor intensive. It may cost more in payroll than it saves in lost tickets.

Many airport operators are now using license plate recognition (LPR) systems to photograph and store data from vehicle license plates. These systems are extremely cost

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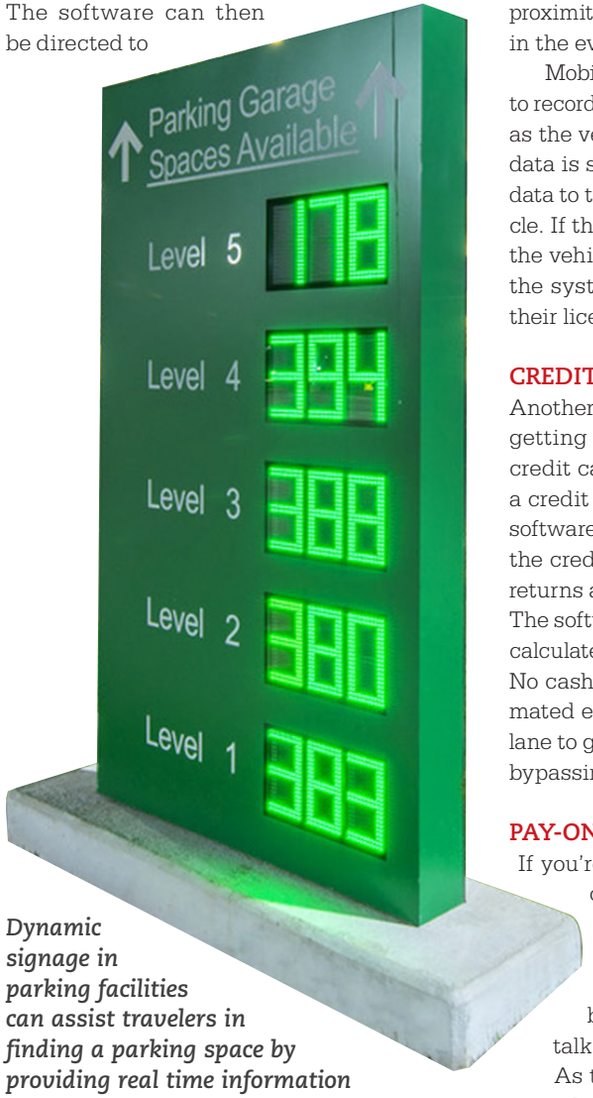
effective and safeguard revenues against lost and even swapped tickets.

There are two types of LPR systems: stationary LPR and mobile LPR. Both interface with the parking access and revenue control system (PARCS) for audit control.

Stationary LPR uses mounted cameras at the entrance and exit points of a facility. The cameras capture the license plate images of cars as they enter the facility. When the ticket is surrendered at the exit, the vehicle's license plate is compared with the image that was recorded at the entrance. If a different ticket is used at the exit, the vehicle's license plate won't match the entering vehicle's license plate, which creates an alarm condition. The software can then be directed to search for the matching license plate image to determine the corresponding entry ticket data (date and time). This provides for accurate fee calculations in the event of lost tickets and eliminates the possibility of drivers exchanging tickets in an attempt to reduce the parking fee.



Dynamic signage in parking facilities can assist travelers in finding a parking space by providing real time information on available spots.

Stationary LPR also enables the vehicle's license plate to serve as a parking credential. Rather than pulling a ticket, the LPR system can record the license plate and automatically raise the gate. The license plate image replaces the ticket. We may lose tickets, but it's unlikely we'll lose our license plates. License plates can also replace monthly parking credentials, such as proximity cards, but it is not perfect and a back-up system, such as a ticket dispenser, proximity card reader, etc., will still be required in the event of a misread.

Mobile LPR uses vehicle-mounted cameras to record license plate images of all parked cars as the vehicle drives through the facility. The data is synchronized with the previous day's data to track the duration of stay for each vehicle. If the facility is separated into zones and the vehicle drives the same route each night, the system can locate vehicles by querying their license plates.

CREDIT CARD IN/CREDIT CARD OUT

Another option for minimizing lost tickets is getting rid of them entirely. Credit card in/credit card out systems have a parker swipe a credit card rather than taking a ticket. The software timestamps the transaction, ties it to the credit card, and stores it until the parker returns and swipes the credit card at the exit. The software then retrieves the entrance data, calculates the fee, and charges the credit card. No cashier is needed so this can be an automated exit lane. Make it a dedicated express lane to give frequent flyers the added bonus of bypassing lines at cashiered exits.

PAY-ON-FOOT PARKING

If you're still using cashiers, payroll is one of your largest operating expenses. Pay-on-foot (POF) systems replace cashiers with automated payment machines that don't require meal breaks, never take sick days, and rarely talk back (except for automated prompts). As the name suggests, the parker walks up to the POF before returning to his or her car. The POF is strategically located so parkers will walk past it or near it on the way back to their cars. The parker inserts the ticket (received upon entering the garage), which is read by a fee computer that calculates the fee. The POF uses visible and audible messaging to guide the parker through the payment process. The audible messages can be programmed in multiple languages. POFs can accept cash, credit cards, debit cards, smart cards, or validations.

The ticket is validated as paid and returned to the motorist. A receipt is provided upon request. The POF advises the parker to insert the validated ticket at the exit verifier at the garage exit and an intercom button is available in the event the parker needs assistance. The parker returns to the car, drives to the exit gate and inserts the validated ticket into the exit verifier, which also uses visible and audible messaging. Upon confirming the validated ticket, a signal is sent to raise the exit gate.

The POF allows for a predetermined grace period (i.e.:20 minutes) to allow the motorist enough time to return to the car and drive to the exit. If the time expires, the motorist will be prompted to pay an additional fee for the additional time parked. The exit station can process credit card payments. This ensures that the parker pays the appropriate fees rather than intentionally paying for parking before leaving in an effort to pay a lower fee and also enables parkers who neglected to pay at the POF to pay at the exit.

If you haven't implemented some of these technologies--and others we haven't covered here--you may be losing market share to an airport that has!

ABOUTTHEAUTHOR

Dan Kupferman, CAPP
Director of Car Park Management Systems, Walker Parking Consultants

For the latest information about technology that is available now and will be in the near future, the parking industry trade association, the International Parking Institute, offers publications, resources, courses, conferences, and airport parking-specific forums. Learn more at parking.org.

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Vans. Born to run.

By Chris Hill, Randal Dick

You Can Get There from Here: Digital Wayfinding at Denver International Airport

The wayfinding can provide turn by turn instructions that can be texted or emailed to your phone.
Four Winds Interactive

Denver International Airport (DEN) is one of the busiest airports in the world. It's also one of the best, by nearly any measure. It has been rated as the best airport in North America that serves 50 million or more passengers per year, and that praise is not simply because of the spectacular views of the Rocky Mountains that constantly remind you that you're in a very special place. Passengers and industry experts alike give DEN enviable ratings on an annual basis for how well designed the airport is, how efficiently it is operated, the quality of the amenities…and even how clean the restrooms are. The great views are just a bonus.

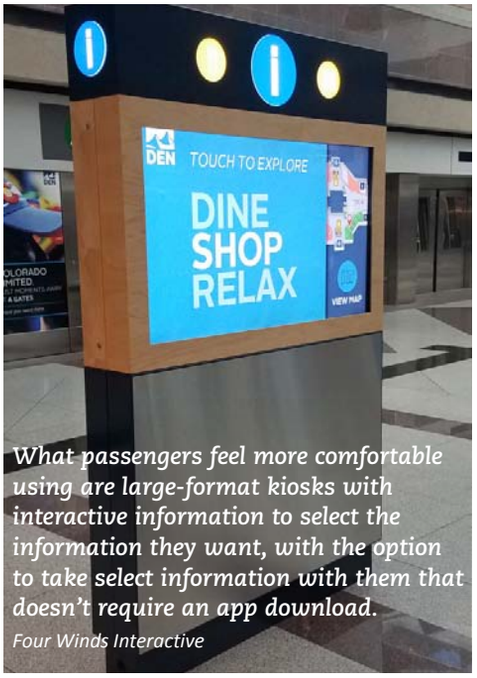
If you live in Denver like we do, it's commonplace to hear people say, "I'm heading out to the airport a bit early to relax before I head out," or hear out-of-town friends say, "I had a layover in Denver and it was lovely. Wish this were my local airport." That passenger experience isn't an accident. We know that firsthand from working with the team at DEN, who carefully cultivate that experience to make the airport a true oasis for passengers. People may think that their getaway starts when they arrive at their destination, but airports like DEN are changing that deeply-ingrained perception by making passengers feel like they have departed as soon as they arrive at the facility. It starts with the airport's iconic architecture and commitment to investing in art installations, which immediately make passengers feel transported. But it doesn't stop there, and that's where a recently-launched visual wayfinding system at the airport comes in.

One of the things always mentioned about DEN in the high ratings given by passengers

and travel journalists is the quality of the dining, shopping and other services at the airport. Not only is the quality remarkable, but it's a true reflection of what makes Denver special:

- You can get the same steaks at DEN that you can at Denver institutions like Elway's and the Denver Chop House
- You can taste Colorado's best microbrews at the Boulder Beer Tap House just like you're going for a stroll in Boulder
- You can get a cup of some of Denver's best coffee at Dazbog Coffee at the airport just like you can at their charming cafes in town
- There's a taste of the mountains if you get a gift box of elk or buffalo jerky from Climax Jerky
- Heidi's Brooklyn Deli is there — another Denver institution
- So is one of Colorado's nationally beloved craft brewer's New Belgium
- And Tattered Cover, a great bookstores
- Plus so many other places to dine, shop and relax

The bottom line is that there is a lot to do at DEN, by design. The airport has done a great job of making this a showcase for the state of Colorado. In many ways, it's the best of Colorado all in one place. And these carefully curated concessions are an important source of revenue for the airport in a time when non-aeronautical revenue is critical to every airport around the world. As every reader of *Airport Business* magazine knows, aeronautical revenue is highly volatile even for an airport as consistently busy as DEN, which is one of the top 20 busiest aviation facilities in the world. Growing concessions-related revenue is one of the most important ways that airports can even out the volatility of aviation revenue and maintain a solid financial foundation for the airport, and DEN's implementation of a new visual wayfinding solution created by our team at Four Winds Interactive is proving



What passengers feel more comfortable using are large-format kiosks with interactive information to select the information they want, with the option to take select information with them that doesn't require an app download.
Four Winds Interactive

that this visual communications technology is a valuable tool for achieving that goal.

DEN is unique in its design with a terminal featuring the Great Hall under the iconic white-tented rooftop that echoes the peaks of the Rocky Mountains. Automated trains connect the terminal to three concourses (A, B and C) with 107 gates and 42 apron loading positions. That layout means that the airport's vast concessions operations stretch from a large collection of restaurants and shops in the pre-security area of the Great Hall to a variety of retail areas in each of the three concourses. DEN wanted to encourage arriving passengers and layover travelers to fully understand the wealth of dine/shop/relax options at the airport and find things quickly while also getting wayfinding information for departing gates at the same time.

DEN worked with Denver-based marketing company Street Source Marketing and Communications to issue an RFP for a visual wayfinding solution that would replace static signage with a digital solution that:

- Promotes the variety of concessions options available at the airport in a dynamic way
- Provides effective wayfinding to passengers to make their way to the dine/shop/relax location
- And also provides other valuable information such as flight status and wayfinding to their gate

Our team at Four Winds participated in the RFP and worked with Street Source and DEN to implement a successful pilot project before expanding to additional locations in the airport. The wayfinding systems are embedded in attractive physical kiosks built by Boyd Sign Systems featuring 55-inch touch sensitive interactive screens by NEC Display. The current scope of the implementation includes 16 wayfinding kiosks at strategic locations throughout the airport that were determined through a quantitative assessment during the pilot program to determine the most effective sites. Wayfinding screens are located in the pre-security area of the main terminal, at each of the train landings where the automated trains drop off and pick up passengers on the way to concourses, and in each of the wings of the concourses themselves.

What our team at Four Winds has found in our implementations at dozens of airports around the world is that there is a resistance among passengers to downloading special apps to assist with wayfinding at airports. That resistance is cross-generational and crosses demographics. What passengers feel more comfortable using are large-format kiosks with interactive information to select the information they want, with the option to take select information with them that doesn't require an app download.

The touchscreens are designed to attract users with attract loops that show images of the kinds of foods and services that are available from DEN concessionaires. For example, who can resist a picture of ice cream cones with sprinkles?

Once a passenger is at the interactive screen, they can get a variety of information about their flight through an interface that is linked directly to the airport's FIDS and other information systems. They can either scan their boarding pass or type in information on the touchscreen, which then pulls up the current status of their flight and latest gate information.

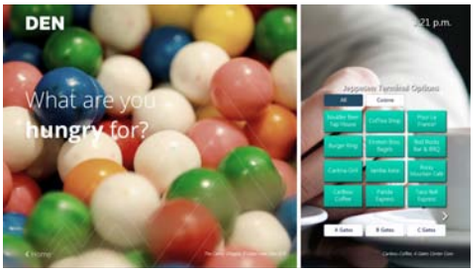
That information is available from many sources both in the airport and on their mobile phone, but one thing that makes these screens so useful to passengers is that they provide highly intuitive wayfinding in a variety of formats. It can display it in a map on the screen. It can provide turn by turn instructions that can be texted or emailed to your phone.

The wayfinding system's flight information and gate-related wayfinding is simply a bonus, though, because the centerpiece of the implementation is a platform that promotes concessionaires throughout the airport…and then helps passengers get there efficiently. When passengers come to the screen, the first three icons they see on the main screen are "Dine," "Shop" and Relax"—matching the three categories of concessions available at DEN.

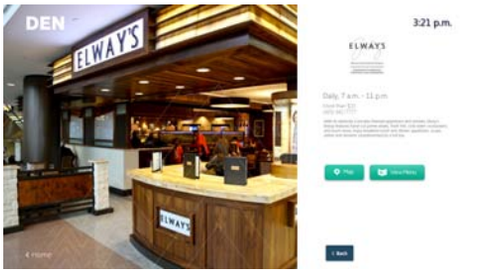
The screen walks passengers through a list of options, allowing them to tap for more information, including menus for the restaurants, a list of services for the spas, and more. Here's an example for Elway's steakhouse.

Once a passenger makes a selection, the wayfinding system gives them all of the wayfinding options mentioned above for finding gates, including a visual map on the screen and turn-by-turn directions that can be sent to your smartphone. The system even provides a photo of the storefront to give passengers a specific visual of what to look for when they approach the end of the directions.

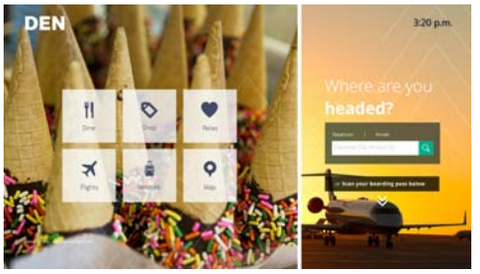
One of the things that passengers particularly like is the way that concessions options are customized based on things like the amount of time until the flight departure. For example, if a passenger hsas more than 45 minutes until their flight departs, the screen will display the full range of dining options, including full-service restaurants. If there is less than 45 minutes until the departure, the system will automatically refine the search results to quick-service options.



The touchscreens are designed to attract users with attract loops that show images of the kinds of foods and services that are available from DEN concessionaires. *Four Winds Interactive*



The screen walks passengers through a list of options, allowing them to tap for more information, including menus for the restaurants, a list of services for the spas, and more. *Four Winds Interactive*



When passengers come to the screen, the first three icons they see on the main screen are "Dine," "Shop" and Relax"—matching the three categories of concessions available at DEN. *Four Winds Interactive*

The entire wayfinding system is controlled with a software system designed by Four Winds Interactive that gives DEN complete control over content and allowing concessionaires to communicate customized messages based on any number of factors: time of day, location of the kiosk in the airport, day of the week, special events that are bringing travelers to Denver, and much more. Four Winds also integrated the wayfinding system with the same data source that is used to concessions and amenities information on DEN's website, allowing updates to automatically be made to multiple systems from the same source the airport is already using. These types of visual communications systems are only as effective as the software that powers them, which must give an organization the ability to customize content in a way that is simple and effective.

One interesting aspect of this project that we should mention is how we worked with DEN to customize how the system is integrated with their emergency communications processes. These screens can be used to deliver emergency messages that are controlled by the airport, for example directions to exit points. In the case of DEN, we designed the system to align with the airport's strategy of reducing visual and audio stimuli during an emergency so that passengers can focus on the information being given by airport employees on the floor or over loudspeakers. To align with that strategy, our screens are designed to automatically fade to black in those scenarios.

Visual communications via interactive screens is one of the most powerful tools that airports have for capturing the attention of passengers and communicating effectively with them in an environment where they are moving so quickly and where there is so much other information and stimulus coming at them. DEN's wayfinding implementation for passengers is proving how effective they can be for enhancing passenger experience and driving concessions revenue.

ABOUTTHEAUTHORS

Chris Hill and Randal Dick

Chris Hill and Randal Dick lead the airport and transportation working group at Four Winds Interactive, which is a leader in the visual communications industry that works on high-visibility projects with airports and other organizations around the world. Chris Hill has more than 20 years of overall experience in the technology industry, with nearly eight years of that at Four Winds. He earned his degree from Colorado State University. Randal Dick has 32 years of experience in the software industry, including senior roles at JD Edwards and PeopleSoft. He has been with Four Winds for eight years, and he earned his degree at USC. Four Winds' airport and transportation team has worked on prominent projects at airports across the globe, including Montreal international Airport, Boston Logan International Airport, Changi Airport Singapore, Las Vegas McCarran International Airport, Zurich Airport and dozens more.

By Kevin Burke, ACI-NA President & CEO

Providing Regulatory Relief for Airports

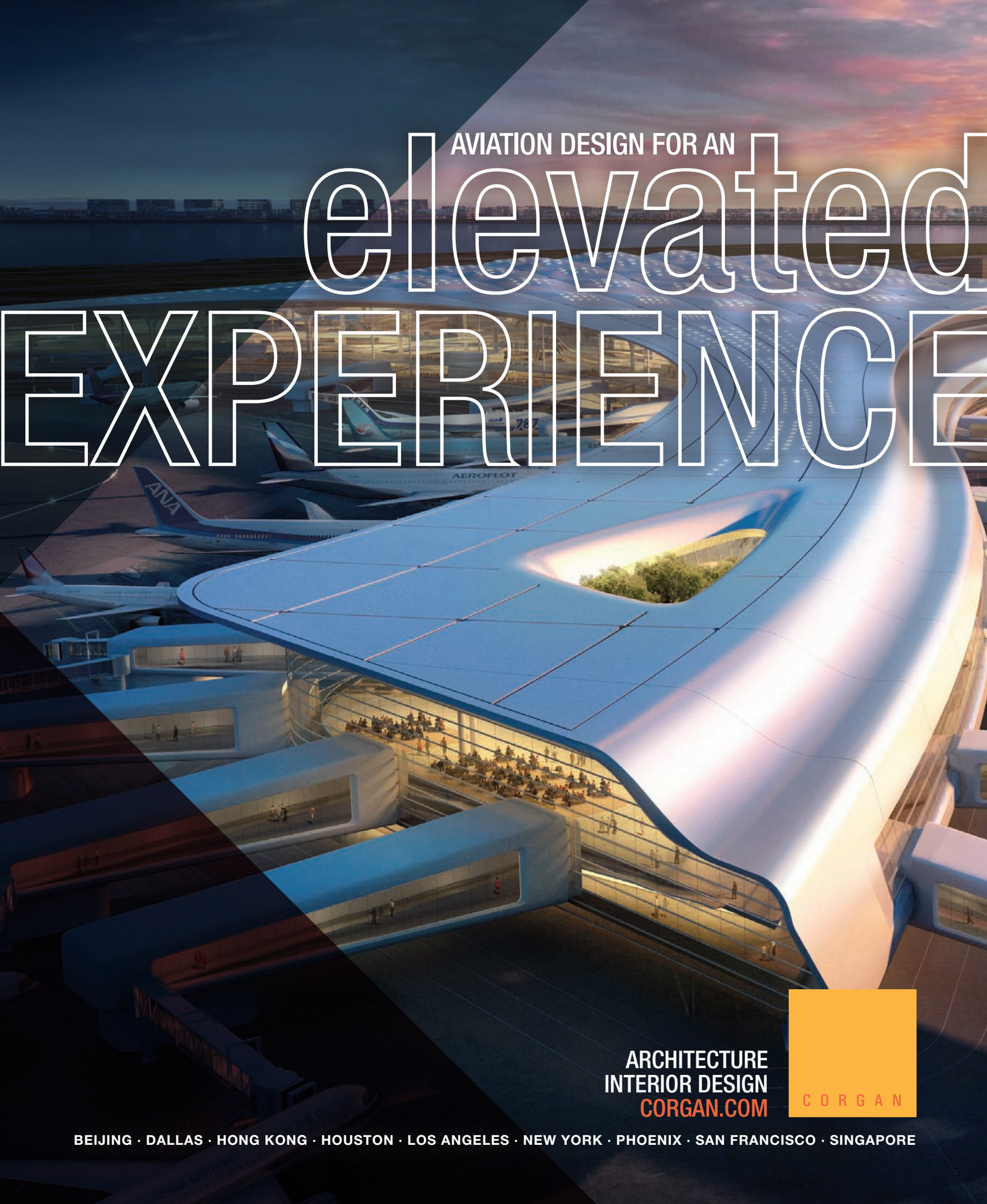
While on the campaign trail, Donald J. Trump was an advocate for airports and the need for modernized airport infrastructure. He was also an advocate for reducing regulatory burdens imposed by the federal government. In one of his first actions in office, President Trump even went so far as to sign an executive order that requires federal agencies to revoke two regulations for every new significant rule issued.

As a highly regulated industry, this action has posed an important question for airports: While we are fully committed to meeting high standards that provide for the safety and security of the traveling public, what opportunities exist to improve our infrastructure and reduce regulatory burdens that prevent airports from making more nimble, business-like decisions?

In February, I had the privilege of participating, along with a group of ACI-NA airport directors and airline executives, in a meeting with President Trump at the White House to discuss the challenges facing the aviation industry. The President engaged in discussions on infrastructure and air traffic control reform, but a major takeaway from the meeting was his interest in regulatory reform for the industry. The President invited us to submit our recommendations on areas where federal agencies can and should ease the burden of federal regulations so airports can operate in a more business-like manner, generate greater economic activity, create jobs, and benefit the traveling public.

Since joining ACI-NA three years ago, one of my top priorities has been to impress upon the Department of Transportation the need for regulatory relief from onerous burdens that have no impact on safety or airport operations, so we welcomed the opportunity to take a deeper dive on the President's commitment to regulatory reform with new Secretary of Transportation Elaine Chao in March. Our productive meeting with Secretary Chao provided us another opportunity to discuss achieving meaningful regulatory relief for the airport industry.

As a member driven organization, we obtained ideas from our members on their regulatory concerns. We developed a list of regulatory relief measures based on their feedback that will enable airports to operate in a more business-like manner. In order to speak as one industry voice, we consulted our industry partners at the American Association of Airport Executives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ACI-NA met with U.S. Department of Transportation Secretary Elaine Chao in March. ACI-NA

(AAAE) to compare and consolidate our lists. Both organizations then provided a single list to President Trump and his administration on several key areas, including land use, air service development and airport design standards

LAND USE

In our meeting with President Trump, we discussed the burdensome regulations that prevent airports from developing airport land for non-aeronautical purposes to generate additional revenue streams. We recommend removing the FAA's role in approving or restricting non-aeronautical development of airport land obtained without federal assistance. This would give airports full control to make business decisions to drive non-aeronautical revenue.

AIR SERVICE DEVELOPMENT

Air service is a top concern for airports as they work diligently to secure a variety of carriers to improve competition, lower fares, expand service and provide a fuller range of air service options for their communities. However, regulatory restrictions and less airline competition have led to an even more challenging environment for airport business development. We urged the Trump Administration to allow airports much needed flexibility in fostering new air service so that we can take an entrepreneurial approach when it comes to attracting service that benefits the traveling public and the local communities with lower airfares.

DESIGN STANDARDS FOR INTERNATIONAL ARRIVAL FACILITIES

International air service is the fastest growing sector for many airports. Our recommendations urge the Trump administration to be flexible in its application of the current Airport Technical Design Standards (ATDS) on airports that receive or are interested in receiving international air service. U.S. Customs and Border Protection (CBP) should consult with airports to develop a new design standard that is scalable to airport size and reduces costs. The cost of the current design standards, if left unchanged, could force airports to forego the international air services they are trying to attract, limiting competition, passenger choice and jobs.

These recommendations represent just a sampling of the regulatory burdens airports face each day. I encourage airports to share your own experiences with your Congressional representatives and demonstrate how providing airports with more flexibility will result in even more successful enterprises that drive economic growth in your communities and the nation as a whole.

ABOUTTHEAUTHOR

Kevin M. Burke

Kevin Burke is President and CEO of Airports Council International — North America.

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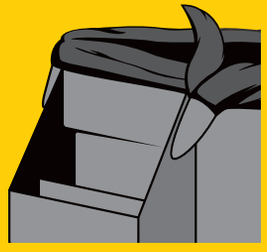

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By Benét Wilson

NOW LANDING: LOCAL CONCEPTS

Airports look to local favorites in their communities to add to their bottom lines.

At San Francisco International, 87 percent of the airport's food and beverage concepts are local.
San Francisco International Airport (SFO)

San Francisco International also has a pop-up store concept, which allows local businesses to test out selling in the airport.
San Francisco International Airport (SFO)

Nashir and her team regularly visit San Francisco's more interesting neighborhoods and attend small business development events to see which concepts might be adaptable to the airport environment.
San Francisco International Airport (SFO)

McEvoy Ranch of Marin County sells olive oils, soap and lotions at San Francisco International Airport.
San Francisco International Airport

As airports continue to step up when it comes to concessions, the industry is seeing growth in bringing popular local concepts from the street to the terminal. These outlets have become a way for airports to further create a sense of place for both local passengers and those who may not have a chance to visit a city.

Why is it important for airports to offer locally based food, beverage and retail concepts? Because consumers are demanding it, said trends expert Daniel Levine, a director at the Avant-Guide Institute consultancy.

"There is a strong trend at the moment toward consumers wanting things that are made locally, that feel more healthful, unique and special," said Levine. "And because trends don't operate in a vacuum, we are expecting to find these offerings in airport environments as well as downtown shopping centers."

Airport retailers can raise profits by raising the bar on what customers perceive as local and unique, said Levine. "As shopping venues, airports are in a special position to trade off their very real position as gateways into and out of distinctive local environments," he noted. "It's not news that airport retailers can do big business with place-name-logo products, but from a trends perspective, we would encourage businesses to up the ante with the most unique local gifts they can find."

San Francisco International Airport won awards for its concessions program, including ACI-NA's Richard A. Griesbach Award of Excellence in 2013. Cheryl Nashir, the airport's director of revenue development and management, said there are two reasons why having local concepts are important.

"One, we believe it's what customers now want to see in our airport. They want to know that they're in San Francisco," she said. "Two, our city has a famous and fantastic culinary tradition. We also have a strong commitment to local businesses and want to work with as many of them as possible." Steve Baker is the deputy vice president for customer and concessions development at Metropolitan Washington Airports Authority (MWAA), which manages Ronald Reagan Washington National and Washington Dulles International airports.

Flying Balalaika Brothers - on stage at Ray Benson's Roadhouse in Austin-Bergstrom International Airport. *Sandy L. Stevens*

"When someone shows you a photo, the first thing you look for is yourself. If we are the airport of the nation's capital, it's only natural that we want to reflect ourselves," he said.

From a business perspective, MWAA wants customers to know the airports not only represent the capital, but the United States as they transfer to other cities, said Baker. "So it's important that we reflected the D.C. area at National and the U.S. at Dulles," he said.

Jim Halbrook is the public information and marketing manager at Austin-Bergstrom International Airport in Texas, where "Keep Austin Weird" is the city's slogan. "For us, it's all about a sense a place and representing the community that you serve," he stated. "Austin is a great and unique destination. It's an O&D airport and the gateway to the city, so it's important that passengers can see, hear and taste Austin in the terminal."

For Tiffany Green, managing deputy commissioner of revenue for the Chicago Department of Aviation (CDA), her two airports — O'Hare and Midway — offer the first impressions of the city. "Fifty percent of our passengers never leave the airport, so we want them to reimagine their journey and have memorable experiences in the airport that reflect Chicago," she said.

THE IMPORTANCE OF PARTNERSHIPS IN BUILDING SUCCESS

IN 2001, Juanita "Busy Bee" Britton, an African-American businesswoman, partnered with Paradies Lagardère to open a Brooks Brothers store at Reagan Washington National Airport. "I had already been around the airport business for five years, working as a secret shopper and as a stager during the unveiling of the renovated Main Hall," she said.

The Victoria's Secret in the Main Hall closed and there was an opportunity to partner with Paradies, said Britton. "They had won the deal to bring in Brooks Brothers and needed a hands-on partner. Someone identified me, we had a meeting and decided to work together," he said.

Paradies has everything in-house, from building to training, said Britton. "But as their partner, I took on customer training, staff hiring, merchandising and ordering," she said. "I knew they had plans to grow bigger, so I needed to learn as much as possible so I could show my ability to operate stores."

But then the 9/11 attacks happened just 12 weeks after the store opened, said Britton. "It was the biggest deal of my life and it was stressful. After 9/11, I had to lay off the entire staff."

But having a great partner helps you recover, said Britton. "We rebuilt slowly, but we had a good backbone and were able to survive. Fourteen months later, we were back on track," she said.

Since then, Britton, founder of BZB International Inc., has become part owner in 21 of the best-known national brands at National and Dulles airports, including Spanx, Brighton Collectibles, Heritage Books, the Washington Pour Bar gastro pub, U Street Pub, Wow Bao Asian cuisine and the newly revitalized Magic Pan Crepes. She opened her 21st store, Pei Wei Asian Diner, in February 2017 at Dulles.

Britton's advice to others wanting to bring concepts to the airport is to join associations like Airport Minority Advisory Council (AMAC), who can help with the process. "You should also take courses to understand what you're getting into, because airports are very different from street businesses," she said. "Finally, get a mentor in the business so you're equipped with knowledge."

Chicago has 77 neighborhoods that are home to diverse cuisines, said Green. "And we want passengers to have a taste of our cuisine and hopefully entice them to come back as tourists," she said. "Plus local concepts are important to our bottom line because they are well received and bring in money."

For example, the Wolfgang Puck restaurant in O'Hare's Terminal 3 was closed, said Green. "It re-opened as Publican Tavern in July 2016 and brought in locally sourced food and beverages," she said. "In March, Publican Tavern was voted as the best airport restaurant/bar for atmosphere in USA Today's Travel 10 Best Readers' Choice Awards. Sales at Publican are up by 31 percent over the previous concept."

When it comes to airport concessions, it's all about getting the right balance of local and national concepts that passengers will enjoy. MWAA and CDA have the challenge of doing it at two different airports.

MWAA's Baker says he looks at it by concept and operator. "If you look at National and Dulles, around 45 percent of our concessions are local to Maryland, Virginia and D.C.," he said. "We've had concepts like Five Guys that grew from a local restaurant to a national one. & Pizza is another concept that's growing like gangbusters."

But it all kicked off with the pursuit of Ben's Chili Bowl, an iconic D.C. restaurant in the U Street neighborhood. "I began conversations with them even before President Obama was elected in 2008. I had come from Atlanta and was looking to create a sense of place, and you can only do that with iconic brands," he recalled. "At the time, Ben's had just opened in the Washington Nationals stadium and they weren't sure they were ready to expand further."

The mix of local versus national concepts at O'Hare and Midway is different, said Green. "Midway is more of a local airport where approximately 50 percent are local brands and that has definitely been proven to be successful there," she said.

O'Hare is an international airport with more international passengers flowing through, said Green. "So you will see fewer local brands there," she said. "Because of the type of passengers we have going through O'Hare, we have to make sure that we provide passengers with recognizable brands and showcase local brands."

Some of the local brands in O'Hare include Sarah's Candies, Vosges Haut-Chocolat, Garrett Popcorn Shops and Argo Tea, said Green. "CDA partners with small businesses like these to help them become successful."

At San Francisco International, 87 percent of the airport's food and beverage concepts are local, said Nashir. Some of those concepts include 24th & Mission Taco House, Boudin's Bakery and Café, Lark Street Grill and Three Twins Ice Cream.

The recently renovated ThunderCloud Subs and Ruta Maya coffee shop at Austin -Bergstrom International Airport.
Sandy L. Stevens

Chef Geoff's inside Washington Dulles International Airport offers hundreds of beers, wines and alcohols for passengers to enjoy while waiting for a flight.
MWAA

Ruta Maya - roasted coffee beans ready to grind.
Sandy L. Stevens

Austin-Bergstrom has 22 food and beverage vendors, said Halbrook. "Of that, we only have two that aren't local -- Vino Volo and Auntie Anne's," he said.

All four airports work with their communities to entice local businesses to bring their concepts into terminals. CDA's Green focuses on finding great quality products and services based in Chicago.

"We do passenger surveys twice a year asking them what they like and want to see in our airports," she said. "We then do a needs assessment and create data to identify needs and wants, prioritize them and move forward to categorize the ones that can be successful at our airports." Some of those brands include Big Bowl, Intelligentsia Coffee & Tea, Goddess and Grocer and Tortas Frontera by Rick Bayless.

MWAA spends a lot of time talking to local businesses, said Baker. "When I came to D.C. in 2005, one of the first things I did was talk to people on what concepted best represented the city and where were good places to eat," he said. "Washington has grown and changed and that's reflected in our airports, so we do quite a bit of outreach in the community."

Nashir's team regularly visit San Francisco's neighborhoods and attend small business development events. "We look at restaurants and ask if it would translate at the airport and can food be delivered quickly enough," she said. "We ask does it say San Francisco, or is it a fresh new concept that's getting acclaim from the neighborhood or does it have a great story to tell?"

Austin-Bergstrom reaches out to local businesses and they reach right back, said Halbrook. "When the airport was built in the 1990s, we had an advisory board guiding us, giving us a target of having 60 percent of concessions be local," he said. "We've exceeded that because of the success of local brands in the community. It's also a matter of civic pride and gives travelers a sense of place."

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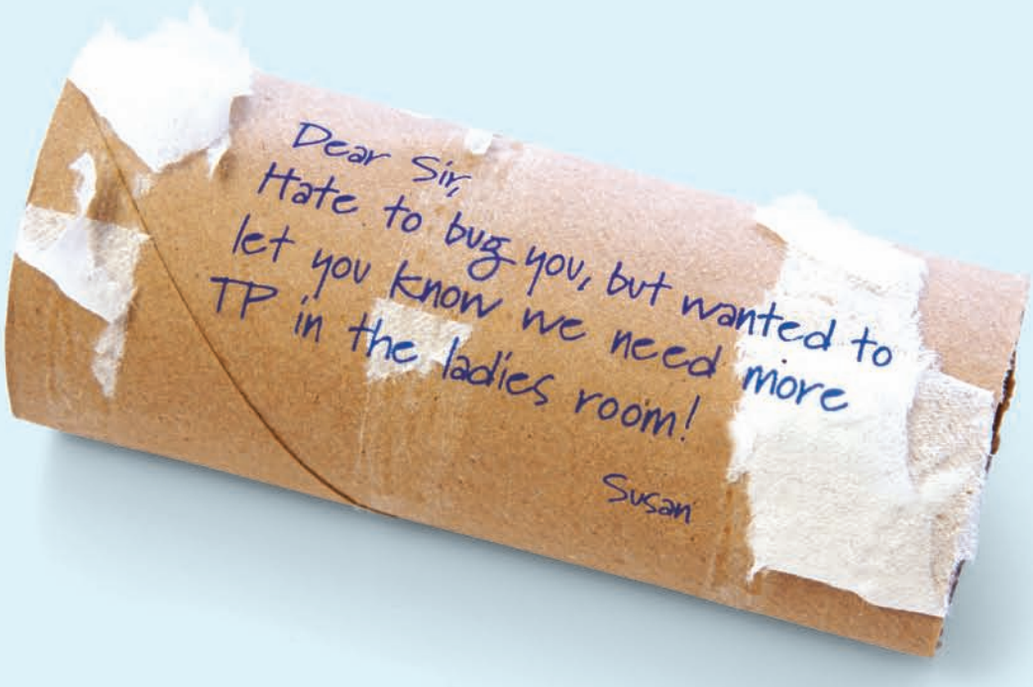

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By Steven Schultz

Practical Lessons Learned From a Digital Signage Network Overhaul

Jacksonville International Airport used a collaborative approach to upgrading signage in its terminal.

Imagine going to the airport to catch a flight for the vacation of your dreams, and finding no information about flight schedules or where to go to catch your plane. How quickly excitement would turn to frustration. Indeed, the very business of any airport is to facilitate passenger movement from the front curb, through security, and onto an aircraft, for which good digital signage is critical.

THE SITUATION

The Jacksonville International Airport (JIA) in northeast Florida serves 5.5 million passengers each year. Over the course of time, JIA had acquired three digital media management solutions and all three were end of life. Content was "functional," but did not support the JIA brand or enhance the traveler's experience. This was the perfect opportunity to replace all three solutions with a single solution that was robust enough to meet the various needs of different stakeholders and yet friendly enough that technical support as well as business ownership could be handled by JIA personnel. Further, it represented an opportunity for the business to change its processes, gain efficiencies and achieve outcomes that were not previously possible with the original solutions.

A project of this type had to be approached carefully because it impacted multiple areas.

Not only would it affect the ability of passengers to navigate the airport and locate their gate, but the existing signage also featured third-party advertising, so any change would impact advertising revenues, and, if something went wrong it would do so in a very public fashion, meaning the traveling public will notice immediately.

In today's world of social media, negative information proliferates at the speed of light. So, how best to navigate through a project like this? There are several important factors, the first of which is to ensure that ALL the stakeholders have been engaged. The second challenge is

to think through and anticipate all the potential risks that involved and develop a strong mitigation strategy. Third – and I cannot stress this enough – you must communicate, communicate, communicate. This isn't exactly rocket science, but the reality is that these challenges are exceedingly hard to do well.

OUR PROCESS

Beginning with stakeholder engagement, the correct stakeholders may not always be obvious. For the JIA project, we started with business development (advertising), landside/airside operations (flight information displays) and information technology. We began with the questions: "What do we want to achieve at the end of the day," and "What do we want the visuals to look like?" This made us realize that personnel from brand management needed to be included, which led to questions that required input from folks in safety and security. Through an RFP process Art of Context was selected to help JIA with integration and design, and they became an integral part of the team.

These stakeholders were responsible for determining the final solution requirements, had ownership of the final pre-production designs, performed User Acceptance Testing and ultimately owned the production content. Various stakeholders participated in the project at various times, depending on the specific scope that was being developed. Even at that surprisingly, there were ideas and requests that the project team had not initially anticipated. For example, safety and security staff wanted to be able to take over any screen in the terminal with emergency messages in the event something happened that could cause the terminal to be evacuated. Business development personnel suggested using the signs to build the "sense of place" and support local events. Another idea was to show different backgrounds during special events, such as a golf theme during the Tournament Players Championship. We began to think about way-finding in terms of enticing people to think about what they might want as they travel, and then help them find it, rather than just present a digital map to the terminal. We even thought about the friends and loved ones that are

picking up passengers traveling to Jacksonville and included signage in the courtesy waiting lot to tell them when flights had arrived so they would know to drive to the arrivals area. Having the right people at the table allowed us to move beyond just being "functional" into a more holistic thought process.

The next key area to consider is risk analysis. Risk analysis actually falls into two broad categories: Project risk, meaning a risk that will affect scope, cost, or schedule of the project, and deployment (or operational) risk, meaning the risk to the organization and its operations when the new technology comes on-line.

Project risk management is often included as part of a project process, but deployment risk

often gets less attention. Because of the public nature of JIA's digital signage, the project team felt that deployment risk was extremely high. If things did not go well, the various airlines would not be able to communicate at which gates flights were located and if the flights were on time. Clearly, the inability to do so would create a very chaotic and confusing environment for both the airlines as well as the travelling public. To mitigate this risk, the project took two specific steps.

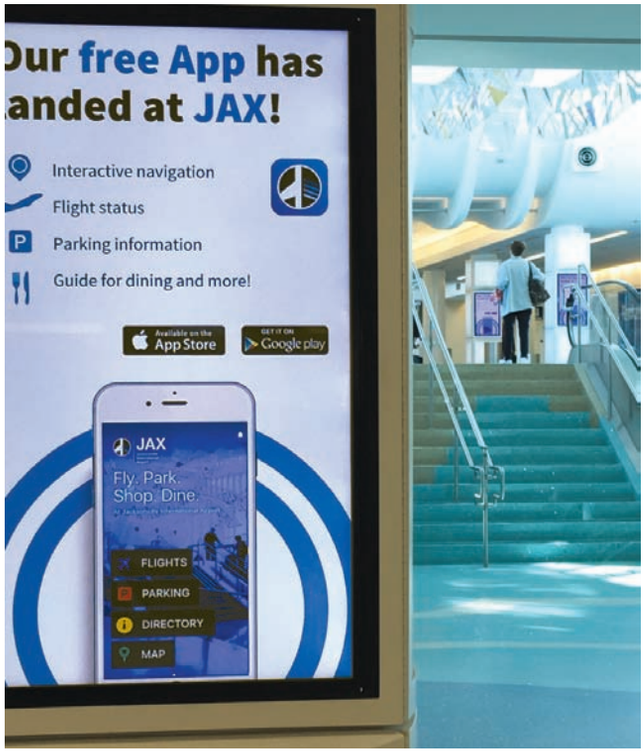
First, a lab environment was built and all content was run in the lab environment to ensure correctness of data as well as stability of the solution. The lab environment also provided the means for the stakeholders to review the final content and sign off on the solution prior to production migration. Taking this extra step ensured a level of ownership from the business side.

Second, the deployment to production was staged over several months, allowing those items with less risk to migrate first. Initially, this also meant that the old media players and servers were left in place in the event there was a deployment problem, which would have allowed us to put the old system back into production.

Because the advertising layouts were the simplest and perceived to be less of a business threat than negatively affecting flight information displays, that content migrated first. With regards to project risk, JIA follows a formal systems development life cycle. When the RFP was issued to select an integrator, the RFP specified that this project deployment methodology would be followed. What resulted was a fixed-price bid, with milestone deliverables tied to the payments. If milestones were not reached, or not reached in a timely fashion, then payment would be held until that milestone was satisfactorily completed. The process also demanded that the stakeholders sign-off on the designs, perform pre-production testing and sign-off that the product was production ready. Any scope that was not included in the original RFP was considered only through a formal project scope change control document that analyzed the impact of the requested change.

The third critical factor of success is communication. This sounds easy and everyone thinks they do it well, but the reality is that it is exceedingly hard to do well organizationally. A project of this type is particularly vulnerable to the opinions of upper management who may not be part of the core project team. Imagine spending weeks or months developing content with the project team in perfect concert and at go-live the CEO says something like "I don't like it, and I don't think that is the right passenger experience." If that happens, the project basically dies at that point. To head off this type of problem project information and visuals that were being developed were communicated in several different ways:

- Project status reports were sent out periodically to executive management and other business stakeholders including samples of what the project team was thinking.



- The project was reviewed every other month in the technology governance meetings by the executive management team.
- The lab environment was created in a space in JIA's administration building that everyone could access and get a "first hand" experience with the proposed content.
- The project team took on the role of "evangelist." We were all prepared with an elevator speech, and took opportunity to talk to everyone we encountered.

If a team member got in the elevator with a vice president, they would say something like "We finished our designs. They are running in our lab. Do you have time for me to show you?" In this way, we consciously tried to reach as many of our key executive stakeholders as possible with formal meetings, information conversations, and formal project communications. Internally, the project team met weekly, even if we felt we didn't have much on the agenda that week. The meetings always turned into something productive, even if it was only to review design ideas and build alignment.

THE RESULT

JIA now enjoys a digital media management system that supports the JIA brand, ADA compliance requirements, emergency communications and enhances the traveler experience deployed in a safe, rational manner that caused no business disruption. The system has provided a higher level of stability and reliability for the business than the old systems, and the business continues to come up with new ideas to expand its use.

ABOUTTHEAUTHOR

Steven Schultz, Director of the IT, Administrative Division of the Jacksonville Aviation Authority

Steven joined the Authority in 2012, and has been working with executive management to implement corporate Information Technology (IT) governance structure as well as put in place needed IT processes and procedures to build a sustainable IT program. This effort has already realized an excess of $500,000 reduction in IT costs, while also building an equipment refresh program and 5-year IT-Business plan.

By Benét Wilson

The TOP AIRPORT CONCESSIONS in 2017

The ACI-NA's Excellence in Airport Concessions Awards highlights the best concepts being implemented in airports across North America.

The winners of this year's ACI-NA's Excellence in Airport Concessions Awards were announced on April 26 at the Business of Airports conference in Palm Springs, Calif. I was honored to be one of the three judges this year, and as a group, we were happy to see a good variety of proposals.

This year's winner of the overall **Richard A. Greisbach Award of Excellence** was awarded to **Portland International Airport**. The judges felt that Portland had a great and well-balanced concessions program with national and local food and retail outlets that are unique to the Rose City. Some of those brands include the rotating food truck program, Stumptown Coffee Roasters, the iconic Powell's Books and the Dragontree Spa. We also acknowledged Boston-Logan International Airport's C/E terminals for a great effort in transforming a public space.

Concessions Person of the Year went to **Randy Goodman**, director of concessions at **Houston Airport System (HAS)**. Director of Aviation Mario Diaz lauded Goodman, with HAS since 1994, for his leadership in improving the concessions at George Bush Intercontinental and Houston Hobby airports. "Randy has shepherded the HAS concessions program with great effectiveness and led his team through encouragement, professionalism development and a drive for improvement," he wrote.

The judges congratulate all the winners in what was a spirited contest this year. Here are highlights of some of the winners who stood out in the competition.

The judges started with the **Best Food & Beverage** program, broken down into large, medium and small airports. In the large category, **first place went to Westfield for Los Angeles International Airport's Terminals T2 and T6.** We felt that Westfield brought a real feel of Southern California in both terminals with concepts including BUILT (Custom Burgers), SLAPFISH Modern Seafood Shack, Wahoo's Fish Tacos and Point the Way Cafe.

Chicago O'Hare International Airport's Terminal 5 won second place for local favorites like celebrity Chef Rick Bayliss' Tortas Frontera, RJ Grunts Burgers & Fries and Hub 51. **Third place went to Dallas/Fort Worth International Airport's Terminal D,** which showcases local brands including two restaurants by popular local Chef Stephen Pyles, CRU Food & Wine Bar and Cantina Laredo, balanced with the expected national brands.

Mountain Concierge at Reno-Tahoe International Airport won the award for Best Innovative Consumer Experience Concept/Practice. *Squaw Valley Alpine Meadows*

In the **medium category, Sacramento International Airport** — a Griesbach winner in 2012 — won first place for its local-centric eateries in **Terminals A and B**. New additions of street-side restaurants included Paesanos,

FIVE CONCEPTS THAT WENT MISSING IN THE AWARDS SUBMISSIONS

I'VE BEEN judging this content for eight years. I've also been to more than my fair share of airports, so I have a fine sense of what I like to see in terminals. After pouring through this year's entries, I was surprised that there were so many great concepts that didn't submit this year. Below are my top five.

- **1. For Best Food & Beverage Program, OTG Management** should have submitted the eateries at Newark-Liberty International Airport's United Airlines Terminal C. It has invested $120 million to bring in great concepts including award-winner Saison, Tacquila (New Jersey's largest tequila bar) and the Abruzzo Italian Steakhouse.
- **2. Another Best Food & Beverage Program** entry should have been Austin-Bergstrom International Airport in three words: Salt Lick BBQ. Any airport where you can smell barbecue is a winner in my book.
- **3. In the Best Innovative Consumer Experience or Concept,** I'm scratching my head on why Miami International Airport didn't submit its beacon navigation program. I used it extensively to find my way around the airport and it was easy and intuitive to use.
- **4. I would have also liked to see American Express** submit its new Centurion Lounge at George Bush Intercontinental Airport in the Best Innovative Consumer Experience or Concept. Amex continues to expand that popular brand in airports. I'm still dreaming about my time spent at the DFW and Miami lounges.
- **5. OTG Management concept Little Purse** — the brainchild of "Top Chef" contestant Dale Talde — should have been submitted for Best New Food & Beverage Concept - Full Service. Not only does it offer a variety of Asian-inspired dumplings, travelers can also get meals featuring noodles hand-pulled onsite.

OTG Management's Saison at Newark-Liberty International Airport in Terminal C won Best New Food & Beverage Concept.
OTG Management

burger joint Squeeze Inn and Iron Horse Tavern in Terminal A. **Edmonton International Airport won second place** for places like Harvey's for burgers, Caffe Sorrentino and Cookies By George. In the **small category, Madison, Wisconsin's Dane County Airport** won for having a modest offering that packs a punch under the Wisconsin Marketplace banner. Restaurants include Ancora Artisan Coffee & Tea, which roasts onsite, the Mad Town Gastropub and Metcalfe's Local to Go and restaurant that showcases local brands.

Under **Best Innovative Consumer Experience Concept/Practice**, the hands-down winner was **Squaw Valley/Alpine Meadows Mountain Concierge at Reno-Tahoe International Airport.** The store offers a life-size cardboard cut-out of Olympic skier Jonny Moseley and customers can buy ski tickets and locally branded ski merchandise, pick up season passes ordered online, take virtual mountain tours, get information on local resorts and relax in a Tahoe-centric guest lounge. The judges felt it was a great use of the space and that other airports could adapt the concept to offer a similar service.

Second place was Hartsfield-Jackson's pre-security Taste of Atlanta event, where passengers could get food samples from some of the airport's eateries. **Third place was Dallas/Fort Worth's DFW Military Exodus for the Holidays,** with concessions and retail outlets open for 24 hours offering special services for military members on their way home.

In August, I wrote a story about the rise of independent airport lounges, which included the winner of **Best New Consumer Service Concept, Escapes Lounge, for its outlets at Oakland International and Bradley airports.** The judges praised the company for bringing the lounge concept to airports that might not have airline lounges (although Bradley does have an American Airlines Admirals Club). And while Escapes was a worthy winner, we would have liked to see more entries in this category.

The **Best New Food & Beverage Concept - Full Service** has become very competitive, and it was difficult for us to choose three winners. **First place went to OTG Management's Saison at Newark-Liberty International Airport in Terminal C.** The judges felt like the restaurant makes customers feel like they're eating in a French bistro. It was a battle, but **Rock & Brew at Los Angeles International Airport's Terminal 1 was second and RumFish Grill in Tampa International Airport's Airside C terminal was a close third.** If we had an honorable mention, it would have gone to Osteria by Fabio Viviani (a popular "Top Chef" contestant) at LAX.

We had another strong competition and a clear winner in the **Best New Food & Beverage - Quick-Serve category: Angel Bakery and Donut Bar at Minneapolis-St. Paul International Airport.** The bakery, run by a mother-daughter team, is a version of the popular local restaurant Hell's Kitchen, which also has an on-site bakery. It features an open kitchen that allows travelers to see the bakers and work and the baked goods are not your normal pre-packaged items -- they're craft donuts, creative cupcakes and baked-from-scratch cookies. **Grindhouse Killer Burgers at Hartsfield-Jackson** was a strong second place for bringing a popular local concept known for amazing hamburgers and milkshakes to the airport. **Wow Bao at Ronald Reagan Washington National Airport was our third place** pick.

The judges were impressed with the number and the quality of the entries in the **Best New Local Concept** category. Again, it was a tough call, but we chose **Portland International Airport's The Country Cat Dinnerhouse and Bar** for successfully bringing a very popular local concept to the terminal. It was also lauded for having a very visually striking grab-and-go food area attached to the restaurant. **Second place went to Kapnos Taverna,** a concept created by "Top Chef" contestant Mike Isabella for **Reagan National Airport.** And **third place went to Hurley's,** an outpost of a popular local

Irish bar located at **Montreal-Elliott Trudeau International Airport.**

The **Best New News & Gift Concept** category is always interesting, because how many different ways can you present it? But airports rose to the challenge, giving us three strong winners. **First place went to MSP Explore Afar at Minneapolis-St. Paul International Airport.** It's the first time the travel brand Afar has partnered with an airport, and it offers convenience and news in interactive zones with listening stations and interactive touch screens. It also boasts an eye-catching, two-story storefront that draws in customers. **Second place went to Texas Monthly at George Bush Intercontinental Airport** for bringing a strong brand to the usual generic news-branded news stands and offering travelers a coffee bar that's open 24 hours a day. **Third place went to Shady Lane,** a unique upscale news stand with a forest theme at **Houston Hobby Airport.**

Every year airports raise the bar for **Best New Retail Concept,** and this year was no exception. We chose the **TUMI/Swarovski store at Tampa International Airport** because we were intrigued at how two seemingly disparate stores worked so well together. **Second place went to the MAC make-up store** at **Houston Hobby** and **third went to Mountain Concierge at Reno-Tahoe International Airport,** which also won the award for Best Innovative Consumer Experience Concept/Practice.

The judges broke down the winners of the **Best Retail Program** category into small, medium and large airports. In the **large** category, we chose **Minneapolis-St. Paul International Airport's Terminal 1** for showcasing 18 new retail stores (a mix of national and local brands) that opened between June 30, 2016, and November 30, 2016. Of the 18 stores, 16 are already surpassing their financial goals. **Second place went to Baltimore-Washington International Thurgood Marshall Airport's Concourse A/B program** for its mix of familiar national brands and local brands unique to the Baltimore-D.C. area.

In the **medium** airport category, **first place went to Edmonton International Airport** for its mix of national and Canadian brands including Indigo Spirit, which is helping celebrate the country's 150th birthday with a special themed gift line to tempt travelers. There was no winner in the small category because there were no submissions.

Every year, ACI-NA and I post guidelines to what makes a winning submission. The shame is that we had several potentially great entries that were rejected because the guidelines were ignored. So here are the tips, again.

- Make sure you enter the correct category. We saw several entries that would have been strongly considered if they had been in the right one.
- Concessionaires and airports should discuss submissions together before submitting them.
- Restaurants and retail, please include a menu/sample list of items sold, a map of the location in the airport and professional photos of your food/goods.
- Videos, published media stories/blog posts and social media comments go a long way in boosting a presentation.
- Show us the money!! A big part of the judge's consideration is if the concept is making money.
- Give us complete presentations that tell your story. If you're submitting in more than one category, create separate ones for each.
- We need more submissions from medium, small and Canadian airports.

By Mario Pierobon

Keep It Safe

Aircraft ground handling operations in the Asia-Pacific region are aimed at improving the status quo to ensure safety performance.

Aircraft ground handling safety performance depends very much on what aircraft ground handling companies can do by themselves to improve their operational status quo.

In the remittal of individual service providers, there are many initiatives that can be implemented and other initiatives ground handling companies worldwide are already implementing. These include the delivery of more effective forms of training, the adoption of common industry operational standards, the analysis of safety reports to identify operational safety issues and the development of the soft skills of operatives to improve the quality of the ramp as a work environment.

Photo courtesy of HKIA


Photo courtesy of HKIA

Yet, ground handling safety performance also depends on factors that ground handling companies do not influence directly, and one of these is airport design. In this month's regional update on aircraft ground handling in the Asia-Pacific region, we will look at some infrastructural developments that are going on at many airports in the Asia-Pacific region to cope with the booming aviation industry and specifically with how the aircraft ground handling infrastructure is being catered for.

One of the main design criteria that airports in the Asia-Pacific region are following is an attempt to prevent the constraints that exist at many older large airports and contribute to make ground damage more likely, such as close stands.

"Hong Kong International Airport (HKIA) is committed to upholding high standards in operational safety. To achieve this, we strictly follow all aviation safety regulations and procedures, which cover all parts of HKIA's operations on the airfield and on the apron. Airport design should include the early installation of infrastructure that encourages ground equipment pooling amongst ground handling agents. For example, provision of charging units at parking stands to facilitate electric ground equipment pooling will significantly reduce the ramp vehicular and equipment traffic and contribute to a greener airport. Meanwhile, the designs of HKIA not only consider the ICAO requirements, but also the flexibility to cater for different new aircraft types such as A380, B747-8, A350 and B787," a spokesperson for HKIA says.

"For example, in the Midfield Concourse, which has been fully operational since March 2016, sufficient space is provided at each parking stand for a wide range of aircraft types and also for equipment manoeuvring and aircraft servicing. There are also strict and long standing guidelines for operators to observe when manoeuvring their ground service equipment to ensure the safety."

HKIA's Midfield Concourse is located west of Terminal 1 between the two existing runways and it has an area of 410,000 square meters. The Midfield Concourse has the capacity to serve an additional 10 million passengers every year. With an area of 105,000 square meters, it provides 20 parking stands and connects with Terminal 1 via an extension of the automated people mover system.

HKIA also aims to build a third runway to handle future traffic demands estimated at 102 million passengers, 8.9 million tons of cargo and 607,000 aircraft movements per year by 2030. The project will see the reclamation of approximately 650 hectares of land north of the existing airport island, bounded by approximately 13.4 km of seawall.

"The safety and security of staff, stakeholders and infrastructure is Perth Airport's top priority. This has resulted in the implementation of ground support activities that create and maintain a safe environment on Perth Airport operated aprons. New aircraft stands have been designed to alleviate the risk of damage to aircrafts and ground support equipment (GSE). They include fixed ground power units and pre-conditioned air systems which are underslung on aerobridges to

reduce ground-based equipment requirements on bays. The stands adhere to International Civil Aviation Organization and Civil Aviation Safety Authority Manual of Standards Part 139 clearance standards. By adhering to these standards, Perth Airport has the necessary space to store GSE that is required to service all aircraft types. Apron drive aerobridges also facilitate the efficient use of space at the bay," according to a spokesperson for Perth Airport, which is the fourth largest domestic and international airport in Australia and is serviced by more than 30 international, domestic and regional airlines. In FY16, 13.8 million passengers passed through Perth Airport, with this figure set to rise to 28.5 million by 2034.

New Zealand's Auckland Airport also takes the airport design issue very seriously.

"The approach varies greatly as to how to remove these constraints, and it includes predominantly a mixture of innovation, IT and infrastructure development as well as changes in operational practice. We are seeing a significant growth in the adoption of technology such as common use self-service check-in to relieve the footprint of check-in development and enhance the passengers experience at the same time, allowing operational resources to be refocussed on customer centric activities," says Darrell Abbott, Auckland Airport aeronautical planning and performance manager.

Auckland Airport's 30-year vision is to build a world-class airport that supports airlines and aviation-related businesses to be economically successful and to boost Auckland's and New Zealand's economies. This vision foresees the building of a second runway.

In airport design, efforts are being committed to avoid a mixed aircraft and GSE traffic on the apron, e.g. with lanes for ground support vehicles that do not cross taxiways. This is a key consideration of the future proofed design for Auckland Airport, according to Abbott.

"Taxiway crossings should be avoided to prevent conflict between aircraft and ground equipment. If appropriate, traffic lanes that underpass taxiways should be considered to facilitate vehicular and equipment traffic between aprons. For example, there are cross-field taxiways between the Midfield Concourse and passenger apron at HKIA. A tunnel under the taxiways is therefore built for airside vehicles and ground equipment," the spokesperson for HKIA says.

"Through regular interaction with stakeholders, Perth Airport has a thorough understanding of the risks associated with GSE and aircraft servicing. These risks are always considered by operational and planning teams when designing or reconfiguring aprons. Where practical, the interaction between vehicles and aircraft is minimized through the use of apron marked roadways," the spokesperson for Perth Airport says. "New aprons are designed with a preference for head of stand roadways, a design which has been incorporated in Perth Airport's planned new International Terminal. Perth Airport also imposes strict speed limits and minimum distances from aircraft and fueling equipment. In addition, Perth Airport has an advanced and robust Airside Driving Program to prevent aircraft damage on the apron and most importantly, ensure the safety of all individuals. The program is undertaken by every person who drives a vehicle airside and is complemented by stringent road rules and safety promotions."

Photo courtesy of HKIA

Newer aircraft stands are being developed with fixed ground support installations that reduce GSE movements around aircraft and thus the likelihood of damage.

"Auckland Airport is very proud to be one of the few airports in the world to offer its Boeing 787-900 customers the capability to utilize mains power, instead of their APUs, to run their aircraft whilst on stand and to actually run up their engines," says Abbott.

Fixed ground power system and pre-conditioned air systems are also provided at parking stands at HKIA to reduce the need of corresponding ground equipment to move around aircraft.

Fixed ground support installations surely have a safety benefit but may require a more significant capital expenditure and longer time horizons to reach break-even.

"The improvement in ramp traffic efficiency in turn enhances customer experience such as quicker baggage delivery. Besides, it contributes a lot to a greener airport by significant reduction of carbon emission from the aircraft auxiliary power units, ground power units and air-condition units powered by fossil fuel," the spokesperson for HKIA says.

"The benefits are more than financial from an airport's perspective and safety is our primary concern, not only for passengers but our entire airport community. There are environmental benefits, and we have always seen a commercial benefit, not necessarily in direct revenue but in reducing the need for further future capital expenditure," says Abbott.

Other considerations that should drive airport design to make the system more resilient, namely less prone to aircraft damage on the apron are a focus on the behavior and operational procedures of system management is paramount. A world-class operation realizes less risk, concludes Abbott.

ABOUTTHEAUTHOR

Mario Pierobon

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By Roddy Boggus

Airplane Etiquette

(the customary code of polite behavior for those flying in a commercial airplane)

Sitting here at my desk at the Institute of Boggus Talk (IBT), I was just reading about a fellow that was forcibly removed from his flight, only because he drew the short straw on an overbooked flight that no one else would volunteer to give up their seat on. Yes, it was a bit of an ordeal, according to the article, with him being forcibly removed from the aircraft. This caused me to wax poetically remembering a couple of chaps who, according to their fellow passengers, began speaking in Arabic and perhaps using threatening conversation during the boarding process. This, similarly, resulted in their removal from the aircraft as well.

As you might guess, this resulted in the best minds of the IBT to start thinking about what can we do to promote more humane and reasonable etiquette that should be expected by those who fly. No, that is not a fire you smell, that is just the smell of cogitation of IBT professionals. Yes, we were tempted to create a list of the 7 Words That You Cannot Say on an Airplane, similar to the literary work performed by George Carlin first in 1972, but quickly realized that actually putting that into print might cause more harm than good. Instead, we rapidly focused on developing the DBAD code for airplane passengers. What is DBAD you say? The IBT has defined it as Don't Be A Dolt (although there are many descriptive words you can use in place of dolt.

Similar to Mr. Carlin, the IBT has defined seven (7) airplane etiquette items (SAE) that passengers need to be schooled on. Let's look at them in detail, shall we?

1. If you are not in first class, you generally cannot pull your roller bag behind you down the aisle without catching it on the armrest on either side of the aisle or magically threading the armrest through the handle bringing you train of luggage to a sudden stop and causing dieback in the line behind you. Please carry your baggage or if you have one of those carry-ons that will roll sideways use it that way. Those of us with elbows will appreciate your consideration.

2.

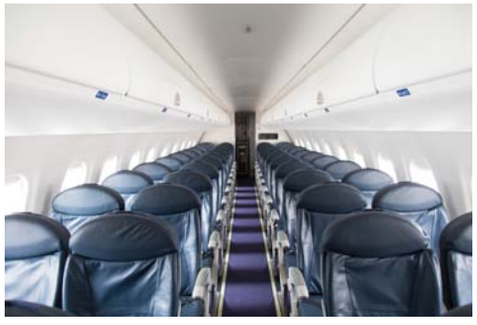
Unless you are at a bulkhead, only one item goes up. The other goes at your feet. There are some that consistently seem to be more worthy than others that cannot be bothered with anything at their feet and therefore stow everything in the overhead bin leaving less room for the poor folks boarding in the steerage group.

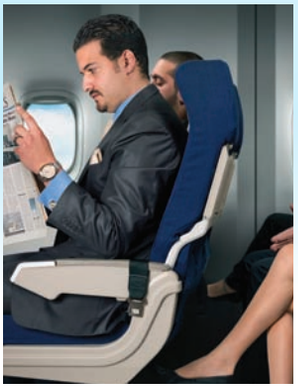
3.

And for Pete's sake, when you put your item overhead, make sure the dang thing fits. I love watching some numskull leaving their bag hanging out of the overhead bin that obviously does not fit. This, of course, leaves it to later in flight when a flight attendant has to play kindergarten teacher and ask, "who's bag is this" to which everyone looks around as if it somehow magically appeared on the aircraft. The culprit is only revealed, typically, when they threaten to take it off the plane. Really?

4.

Now I'm going to type this part really slow, so that those that cannot read fast can digest this. In every plane I've ever been on, including Southwest Airlines, when walking from the front of the plane toward the rear the "A" seat is always the window seat on the right side. While it may not seem natural, the "B" seat is generally next to the "A" seat. In coach if it is a 3-3 seating configuration, the right window is "A" and the left window is "F". Which, would lead you to discern that the right aisle seat is "C" and the left aisle seat is "D". Oh, and one other thing, the rows are generally numbered sequentially from small numbers to big numbers in the back so if you are in row 28, you are generally not near the front of the aircraft. And finally, if your seat is on the left side, don't pick your row number by the row on the right side. Some aircraft rows are offset from right to left.





5.

In your big luxurious coach seat, please recline gently. It is bad form to press the button and slam the seat back thinking you may somehow, with enough force, convert your seat to a lie-flat bed. There's not much room between rows these days and the sudden and unexpected slam-back can cause more than casual conversation between the participants, including ejection from the flight. It is acceptable to make a "back-up beeping noise" when reclining just to let your fellow passengers know your intentions.

6.

Yes, it can be a struggle to properly use the toilet in flight, especially, if there is chop. While this condition seems to affect men more than women there are some that must generally go in the woods when not on a plane. Might I suggest lowering the seat and lid when complete? If you have had trouble sighting the target in, make sure you use the Boy Scout motto and leave the area better than you found it. And, for those that still wash their hands afterwards, here's a tip, once you are done, press the lever that will pop up the sink stopper and let all that water drain. Easy peasy.

BOGGUS TERMS

- **IBT:** Institute of Boggus Talk
- **DBAD:** Don't Be A Dolt
- **SAE:** Seven Airplane Etiquette (items)

7.

Finally, please do not text as you are exiting the plane. It has been shown time after time that texting and walking leads to accidents like falling into ponds, fountains, etc. Plus, no matter what you think of your walking and texting skills, not only do you walk slower while texting you also weave. The IBT is advocating trap doors in jetbridges so that those texting will fall to the apron leaving the rest of us to exit the aircraft at a much faster pace.

Using the IBT's DBAD code for SAE in these times of nearly 100 percent load factors will help contribute to the pleasant experiences of all those flying, including those wearing leggings. Next issue we tackle the hard hitting conversation of whether or not drones should be allowed to be flown in the cabin during flight.

ABOUTTHEAUTHOR

Roddy Boggus,
Executive Vice President of Aviation, Suffolk
Roddy is is responsible for National Aviation Strategy, Pipeline Sourcing, and Tier Accounts. A 30 year aviation professional, he is an Architect with a Bachelors' of Design from Texas Tech University. Roddy is the 2017 Board Chair of the Airport Consultants Council (ACC) and sits on the Board of Directors for the International Partnering Institute (IPI) as well as the International Association of Airport Executives (IAAE).

By Benét Wilson

Provide Secured Access For Airports

Getting the right mix of policies and procedures in place can enhance security while minimizing queues.

Sixteen years after 9/11 and the creation of the Transportation Security Administration (TSA), airports are still working to balance passengers' desire to have a hassle-free experience with the need to guard against all potential threats.

On Nov. 1, 2013, a gunman opened fire in Terminal 3 of Los Angeles International Airport, killing a TSA officer and injuring others. And on Jan. 6, a gunman opened fire in the baggage claim area of Terminal 2 at Fort Lauderdale–Hollywood International Airport, killing five people and injuring six others.

A bomb attack at Brussels Airport on March 22, 2016, killed 32 people and three of the bombers, with more that 300 others injured. Another bomb attack happened at Turkey's Istanbul Atatürk Airport on June 28, killing 45 and injuring more than 200 others. These attacks have airports around the world on high alert, constantly working on plans to ensure the safety of the traveling public.

Orlando saw changes in the past 16 years, like rairports in the U.S., said Brian Gilliam, director of security at Orlando International Airport. "The challenge has been and continues to be the never-ending attempts to plug security vulnerabilities and respond to new security threats," he said. "Our airport was originally built to move people and baggage as quickly and efficiently as possible, but now we must try and achieve that goal while layering on more and more security processes and requirements."

The Los Angeles Airport Police works closely with TSA and has established requirements to implement security background checks for airport and airline employees, said Rob Pedregon, the public information officer for the Los Angeles Airport Police Department. "Through this process, initial and recurrent background checks are made. This Secure Identification Display Area (SIDA) badging process is conducted prior to granting unescorted access to any sterile area of the airport," he said.

Together with TSA, the Los Angeles Airport Police conducts random screenings of employees as they enter restricted areas, said Pedregon. "For unpredictability, these screenings vary in times and locations."

The Los Angeles Airport Police has a unit to enforce TSA rules and regulations, said Pedregon. "The Vulnerability Assessment and Analysis Unit independently and collaboratively conduct audits of employees and

vendors," he said. "They work hand in hand with planning and construction to ensure that any additions or changes are within aviation security guidelines and work to reduce access to critical areas when necessary."

Los Angeles Airport Police conduct random vehicle inspections at airport access points prior to entering the Central Terminal Area, said Pedregon.

"These vehicle checkpoints, called Operation Safe Entry, give us the ability to mitigate threats before they enter highly populated areas," he explained. "Like our random screening of employees, they are conducted at varying times and locations for unpredictability." Los Angeles International Airport has enhanced its perimeter fencing and is in the process of replacing and installing new bollards throughout the airport to mitigate incidents like the tragic event that took place in London in 2005, said Pedregon.

Orlando airport interacts with TSA on a daily basis to ensure that stated goals and objectives are adhered to and that both sides are getting the most from our collective efforts, said Gilliam. "We have worked side by side with the TSA from the first day they arrived at our airport. The Greater Orlando Airport Authority has provided space and access to technology to help them perform their tasks while providing world class service." Like LAX, Orlando also employs a layered approach to security. "[This] allows multiple strategies to be deployed that will address many different threats simultaneously," said Gilliam.

One such layer is Orlando's approach to the insider threat, said Gilliam. "We are one of only three airports nationally that conducts full employee screening to ensure the significant employee population remains in compliance with all security processes," he said. "Probably the single most significant process that the authority put into place was the requirement of full employee screening. This was not and is not an inexpensive program to maintain, but we feel it is probably the one of the most important security processes at Orlando International Airport."

When it comes to federal and airport funding, the biggest bang for the buck has been spent on CCTV feeds, equipment and training, said Pedregon. "We hold monthly `Trunk Top Trainings' with all of our local, federal and airline partners and conduct scenario-based trainings," he said. "These trainings provide each entity with an understanding of who will be responding, what their responsibilities will be and what resources are available in a multitude of circumstances."

Orlando has dedicated personnel that take the funding needs expressed by various departments at the authority and look for ways to maximize the available grants, cooperative funding

and other sources of capital to obtain the best return on investment, said Gilliam. "I will again point to our Full Employee Screening program as the biggest bang for our buck, but we also have invested considerably in technology, some of which was supported by federal funds."

One of the biggest challenges we face in balancing the need for safety and ensuring a good passenger experience is by far convenience and efficiency, said Pedregon. "LAX has seen a consistent increase in the number of travelers and vehicles that pass through our airport annually," he said. As the passenger and cargo numbers increase we are tasked with finding new ways to increase and enhance security without compromising our guest experience."

It's always a balancing act, said Gilliam. "We try to go above and beyond in providing what we call the `Orlando Experience' that elevates our customer's experience at the airport to the extent that the safety and security measures seem minimized and less intrusive or cumbersome in their overall experience," he said.

LAX is using technology, during critical incidents, to ensure the safety and security of the traveling public by providing real-time communication and information through the use of electronic messaging boards, the Nixle subscription messaging service and a wireless emergency notification system that has the ability to ping all smartphones in a specified area with a message, said Pedregon.

TECHNOLOGY PLAYS A KEY ROLE IN SECURITY

AIRPORT security has changed dramatically since the inception of the TSA program, said Roman. "This includes integration with local and federal law enforcement authorities improvements in technology, training, integrated enhanced and diverse security initiatives and technological physical security measures within the airport operations area," he said. Airport security encompasses multijurisdictional authorities, said Roman, including:

- TSA, which is responsible for airline passenger screening and security
- Municipal, state and airport police authorities, who provide armed security and surveillance of terminal, baggage, cargo, air operations areas and supporting infrastructure such as aircraft fuel farms, aviation communication arrays and and vulnerable aircraft navigation ground base equipment areas
- The FBI, whose responsibilities include investigation of violations of federal aviation law related to criminal offenses, including security breaches
- U.S. Customs and Border Patrol, whose primary responsibility includes ensuring that the export and import of goods, and equipment, along with passengers, and crew entry and exit to/from the United States and its territories, are all compliant with federal law as it relates to their area of jurisdiction

Within TSA alone, there are numerous security initiatives that are not commonly known or always readily recognized, said Roman. "Many of these were implemented throughout the timeline after the TSA program initiation through the current date," he said.

TSA uses Behavior Detection Officers, who are trained to look for behavior that may represent deception, uncharacteristic nervousness or fear when approaching or during the screening process, as opposed to normal passenger reactions ranging from acceptance, annoyance or normal parameter anxiety, said Roman. TSA currently employs approximately 1000 aviation inspectors and 450 Transportation Security cargo inspectors, said Roman. "Their goal Is to inspect and investigate the passenger and cargo transportation network for protocol compliance and security," he said. There are also Visible Intermodal Prevention and Response (VIPR) teams, specialized highly trained armed and unarmed teams, said Roman. "They include but are not limited to Federal Air Marshals under the management and control of TSA," he said. "Although their responsibilities include non-airport transportation, they are highly visible law enforcement and action teams throughout airport operations areas including the terminals, cargo, air operations side and supporting critical infrastructure." TSA has enacted enhanced screening procedures, which includes enhanced interview techniques and enhanced or more aggressive pat-downs, said Roman. "This program has been met with significant controversy in that it permitted the same sex physical pat down inspections of the groin and breast areas. Enacted in 2010, it has undergone refinement and modification." At select international airports, various electronic perimeter security devices, smart technology surveillance systems, explosives detection systems and more are deployed at the perimeter fence that protects air side ground operations area and the runways, said Roman. "Internal fences and counterterror of vehicle barriers have been placed at select international airports protecting vital aviation infrastructure such as two-way aircraft to ground communications arrays and aircraft navigation arrays." Passenger luggage and cargo inspections have been increasingly made more robust, using advanced imaging and bomb detection equipment, said Roam. "Perimeter inspections of all vehicles and trucks entering the cargo area is also performed by both TSA personnel and private contractors supervised by TSA," he said. "This is augmented by Customs and Border Patrol Law Enforcement Agents." Joint local law enforcement and FBI Counterterrorism Task Forces often exist at the largest and busiest international airports, said Roman. "They are responsible for reviewing the latest intelligence, threats, conducting investigations, and disseminating this information to appropriate security personnel on an as needed basis," he said. "They work hand-in-hand with TSA and other security personnel at major airports."

Anthony Roman is a pilot and the founder and CEO of security consultancy Roman & Associates.

"We've also incorporated a text to 911 service where the public can text a message directly to our dispatch center," he said. "This service could be especially useful in a situation when speaking isn't possible or prudent like in a shelter in place situation."

Orlando does not discuss specific security technology or tools, said Gilliam. "But it is a multilayered approach that utilizes technology, physical infrastructure and human assets in the overall methodology," he said. "Without going into too much detail about our security processes and technology, I can say that we believe in a layered approach to security. We have invested large sums of money in perimeter surveillance and detection technology, CCTV, communication advancement and improvements, and the use of explosive detection K-9s."

The future of airport security is now, said Pedregon. "Every day, changes are being made to expedite the screening process. New technology is being added to screen multiple passengers at the same time," he said. "The use of TSA Pre-Check and Global Entry have added to the efficiency."

LAX is undergoing a $14 billion construction project that includes an automated people mover that will have connections to light rail, parking structures and a consolidated rental car facility, said Pedregon. "This project will substantially reduce the number of vehicles in the Central Terminal Area. By far, we see the future of airport security as a form of community-based policing," he said. "Our employees and passengers are the added eyes and ears to our layers of security."

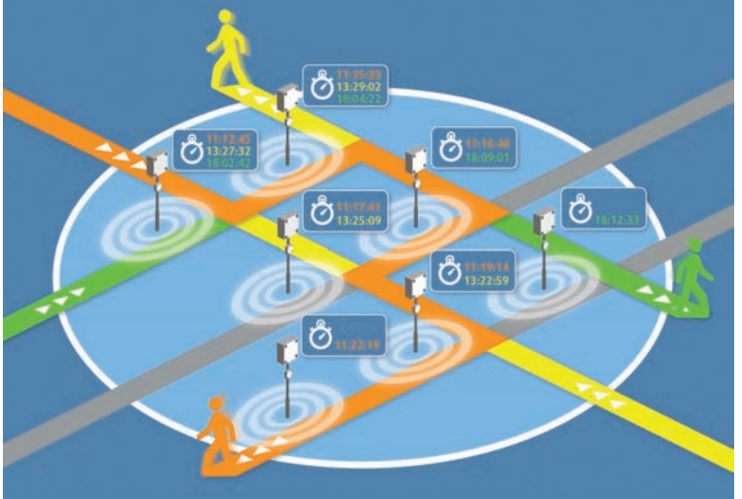
Flexibility will be the ongoing challenge because as threats change, so must airports' approach to mitigating those threats and trying to be proactive in our efforts instead or simply reactive, said Gilliam. "Technology will play a significant role, but human factors and elements will always play a vital role in securing our airports," he said. "It is expected that there will be increased use of technology not only in the terminals, but at the beginning of the passenger ticketing process.

"The more we know about the traveling public prior to their visit to the airport the better we can protect ourselves," he said. "And I think you will see much more security training being offered to all airport employees. Airport employees are our frontline defense against threats to the airport and the more they are trained on what to look for and how to report and respond to threats the safer we will all be."

By Christian Bugislaus Carstens

Passengers' Phones Help Create Seamless Airport Experiences

Tap into new data at your airport by using the power of the traveler's phone.



Airports can retrieve both live and historical data about specific patterns, such as entrance and exit usage, walking routes and time spent in various areas, such as security, retail, lounges, rest rooms, gates and more.
Blip Systems

Which parking spaces, airport entrances and restrooms do passengers use? How many people show up at airport processes, when do they arrive and how long do they wait in line? How do frequent flyers shop compared to tourists? These questions and more are being answered, based on flow-measurement data from passenger mobile device movements.

How do you ensure that passengers enjoy a first class airport experience from the moment they enter the car park to boarding the plane and at every stage in between? How do you effectively maximize non-aviation revenue? How do you accurately match staffing resources with passenger demand without violating KPIs?

Handling passenger flow smoothly and efficiently is key to the success of an airport and its image. To understand and improve individual areas of airport operations, it is important to understand that each area influences another and that the traveler's journey is seen as a single process, rather than as a string of isolated events.

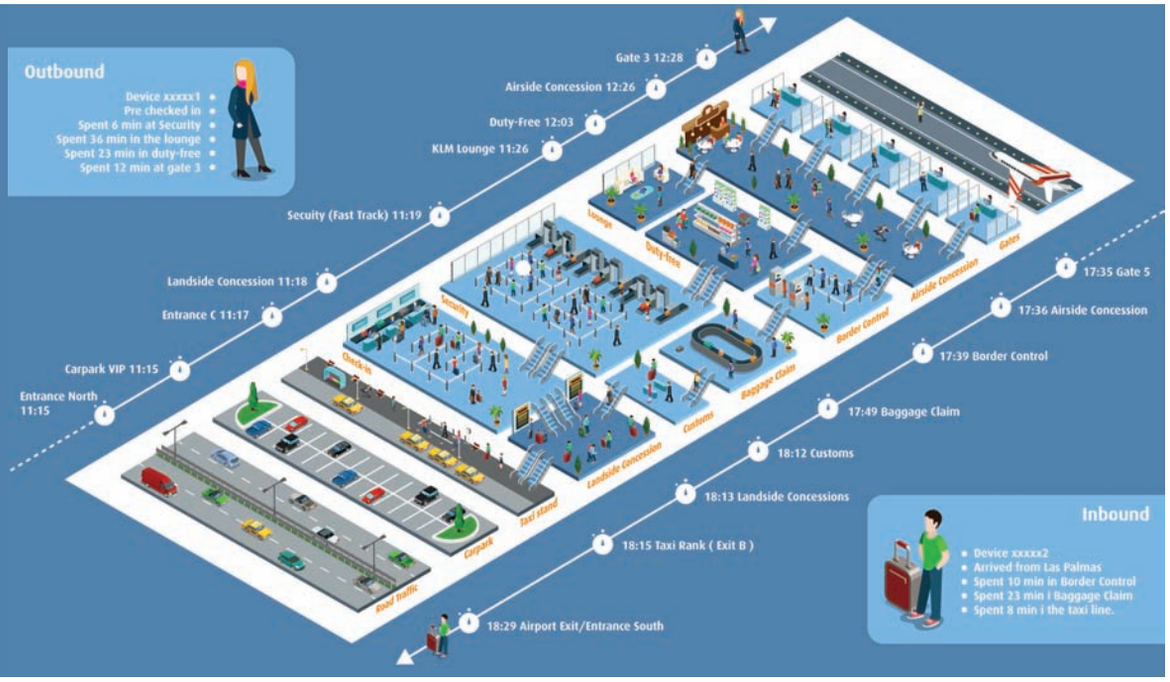
Air travel has grown considerably over the last couple of decades, putting pressure on airport infrastructure and processes. However, capacity expansions can be costly, so accurate wait time and flow information is crucial to provide a premium customer experience, improving capacity planning and maximizing revenue.

The basic requirements for happy travelers are easy parking and check-in, speedy security processing, and comfort while waiting in airport terminals. These factors can make or break a passenger's airport experience and strongly influence how much money they spend in the retail areas.

Non-aviation activities have become increasingly important for airports, with several studies revealing that half of airports´ revenue comes from a combination of retail and parking. For example, a 2014 study showed that passengers are willing to spend up to €1,00 per minute in airport concession after completing the security process; however, an extra 10 minutes spent in a security queue reduces passengers' retail spend by on average 30 percent. These findings show the importance of measuring, optimizing and improving passenger flow as an important tool to generate more non-airline revenue for airports.

Documenting movement patterns is crucial to greater efficiency when planning new construction initiatives and for optimizing the position of signage, processes, retail outlets, services, and general layout, to improve the retail tenancy mix and more.

Blip Systems



MEASURING PASSENGER FLOW USING MOBILE DEVICE MOVEMENT DATA

A recent Expedia survey found that 94 percent of leisure travelers travel with a mobile device, meaning that data collection from mobile devices can accurately provide hard numbers of a significant percentage of travelers.

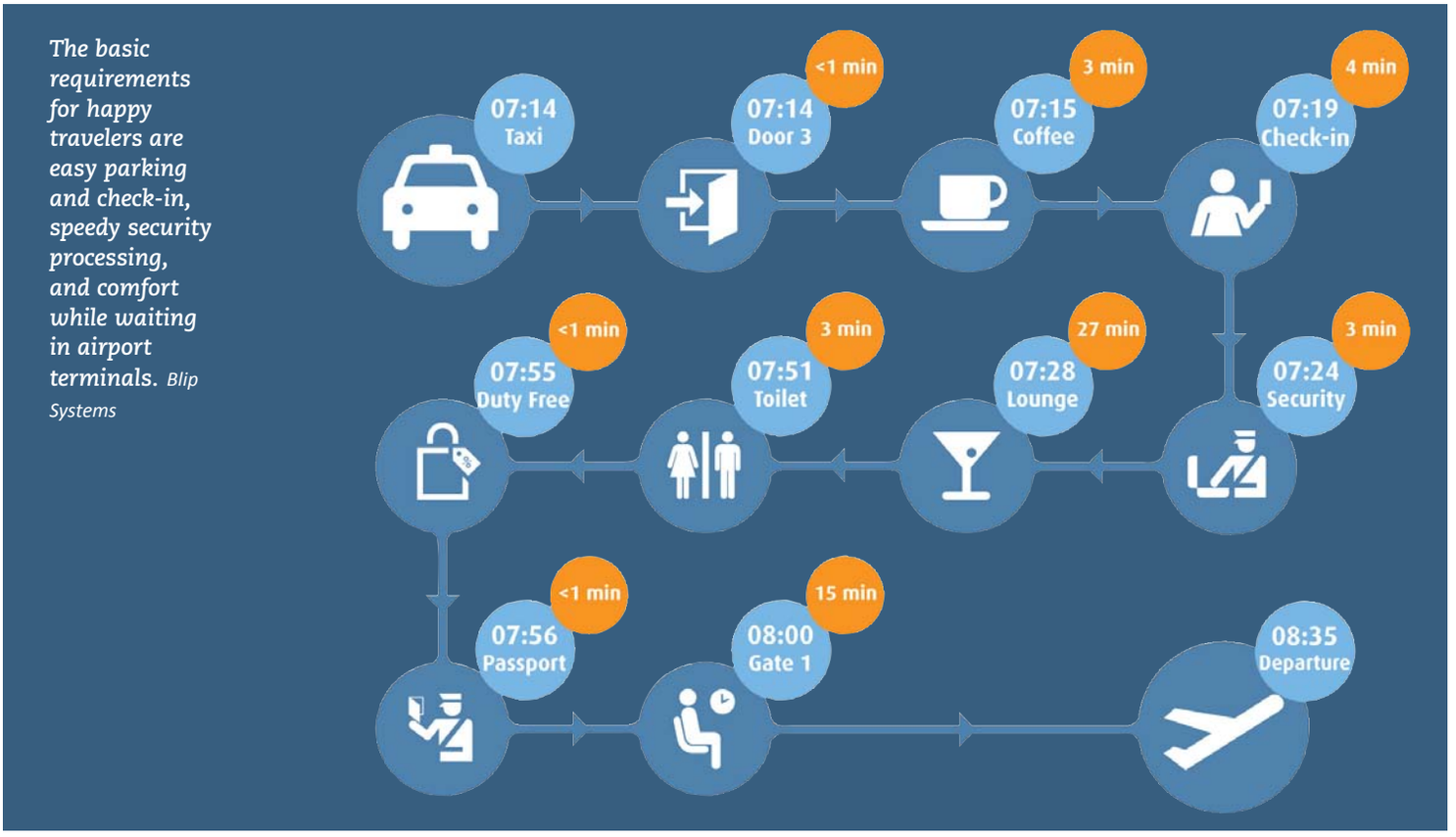
With sensors that measure the movement of passengers´ mobile devices, airports can generate a cohesive passenger experience picture, including accurately measuring and predicting wait times, while simultaneously providing data about how passengers move and use the airport.

Airports can retrieve both live and historical data about specific patterns, such as entrance and exit usage, walking routes and time spent in various areas, such as security, retail, lounges, rest rooms, gates and more. The patterns can be averaged over a day, a week, a month, as well as a specific time of day, a specific holiday, etc. This enhances an understanding of how disruptions or changes affect standard behavior and enables the airport to add value to existing facilities and new investments to unlock new business opportunities.

COLLATING THE DATA

Any combination of data can be extracted for measurement, both real-time and historically, to provide the desired output, such as:

- Queue times and occupancy and flow per area, per flight
- Origin/Destination network diagrams
- Auto-profiling passenger behavior from entrance to gate, minute by minute
- Multi-stage passenger show-up profiles



The basic requirements for happy travelers are easy parking and check-in, speedy security processing, and comfort while waiting in airport terminals. Blip Systems

- Forecasting occupancy per shop/restaurant/other area, per flight
- Bypasser/browser/engaged/buyer ratios

"The solution provides us with immediate visibility to the customer experience and resource effectiveness with throughput planning. It allows us to put the customer at ease at a critical stress point and reinforces our expectations around superior customer experience."

BRIAN COBB, VICE PRESIDENT, CUSTOMER EXPERIENCE AT CVG.

- Forecasting shopping time per flight
- Forecasting occupancy and shopping time per flight as a function of check-in/security/gate announcement time/gate allocation.

The statistical combinations can be as generalized or precise as airport management wishes it to be for review and optimization.

USAGE

Facilities

Documenting movement patterns is crucial to greater efficiency when planning new construction initiatives and for optimizing the position of signage, processes, retail outlets, services and general layout, to improve the retail tenancy mix and more.

Operation and resource planning

To comply with service-level agreements and evaluate or challenge key performance indicators, it is important to measure and predict queue and flow. This provides airports with resource effectiveness visibility for greater processing efficiency.

As the solution measures passenger flow in real time, it can provide early warning when predefined thresholds are exceeded. This enables airports to proactively initiate countermeasures before the situation escalates, for instance by opening additional processing lines.

By adding third-party data sources, such as flight information and passenger data, airports can forecast passenger volume and show-up profiles generated per weekday, carrier, flight type, etc. This allows airports to simulate the consequences of changing production capacity, to automatically and accurately scale staffing resources with passenger demand, both on the fly and for days, weeks and months to come, without affecting KPIs.

Passenger experience

Travelers hate queues – time spent waiting invariably comes at the top of the list of complaints. This solution enables airports to put lines in perspective, for example with real-time wait times on screens at security and

immigration processing. This reduces passenger frustration by creating realistic wait-time expectations.

Retail

Ensuring that passengers experience a quick and easy passage through the first stages of their journey increases positive passenger experience at the airport. The less time passengers spend in airport processes, the more they will enjoy a more stress-free and pleasant travel experience in the concession area, directly increasing non-aviation revenue.

With the extensive knowledge, this system provides about how passengers spend their time in concession areas, retailers can document marketing initiatives and have valuable information that helps improve and optimize services, such as resource allocation, product placement and variety as well as performance benchmarking.

With sensors that measure the movement of passengers' mobile devices, airports can generate a cohesive passenger experience picture, including accurately measuring and predicting wait times, while simultaneously providing data about how passengers move and use the airport. Blip Systems

How it works

The sensors detect mobiles devices, such as smartphones and tablets. By identifying the devices as they pass multiple sensors, specific and accurate statistical information, such as travel times, dwell times and movement patterns become available. The sensors are independent of light, work 24/7, require no maintenance and do not interfere with existing Wi-Fi networks.

Both real-time and historical data are presented in a web-based user interface with a series of dashboards with interactive widgets, KPI graphs, Sankey diagrams and more. Data can be extracted through various output facilities, including an open API-interface, allowing for easy and rapid integration into existing management systems.

Sensors versus iBeacons

In order for iBeacons to work as a flow measurement tool, they require that passengers download a mobile app. As mobile device-detecting sensors automatically detect mobile devices with Bluetooth or Wi-Fi enabled, without traveler interaction, the penetration rate is significantly higher (40 percent) than with iBeacons (1 percent).

ABOUTTHEAUTHOR

Christian Bugislaus Carstens, Marketing Manager, BLIP Systems

Mr. Carstens is the Marketing Manager for BLIP Systems, producers of the sensor agnostic BlipTrack solution. From pedestrian and vehicular queue and flow management, to advanced capacity forecasting, BlipTrack provides decision-makers in airports, road traffic, amusement parks, train stations and ski resorts with visibility and other necessary tools to optimize staffing resources and improve revenue, while maintaining a high level of customer service.

By Benét Wilson

Bob Cortelyou, SVP — Network Planning Delta Air Lines

As Delta Air Lines continues to focus its growth efforts across the world, it's focusing on local economies and the people when it comes to adding service.

Bob Cortelyou has been senior vice president of network planning for Delta Air Lines since 2007. During his tenure, he has been credited with helping the airline make one of the largest network transformations in aviation history after its merger with Northwest Airlines in 2008. Since then he and his network planning team have continued to build a diverse global network by implementing the largest international expansion in the airline's history, with more than 60 new international routes.

Cortelyou spoke with *Airport Business* magazine about growth in the hubs, what it takes to get air service, investments in airports and future growth.

Airport Business: Delta announced that it was adding seven new cities out of Seattle and that some existing cities were getting more frequencies. Delta started bulking up Seattle back in 2012. What made this city such an appealing market, especially because you have the Salt Lake City hub?

Bob Cortelyou: I would say that Salt Lake City is in the in Rocky Mountains while Seattle is in the Pacific Northwest. Of course, we already served Seattle, so we had a good base to build on. We are a global carrier and there's no doubt that Seattle deserves a global airline. Delta is there to fulfill that need. So not only do we fly to markets in the Pacific Northwest and West, but we go to China, Japan and Europe. I think the Pacific Northwest continues to grow

Seattle is an important market for Delta to invest in because Cortelyou said the market deserves a global carrier.
Delta Air Lines

and it was the perfect time for Seattle to have a global carrier and Delta, of course, is that carrier. It's been a great success story. And a lot of that has to do with the acceptance of the local community that wants a carrier that can serve all areas of the world from Seattle.

AB: What hubs do you see as having growth prospects in 2017?

BC: The whole industry in the U.S. is doing incredibly well. We're seeing a lot of leisure travel now along with more business traffic. The results are very welcome coming off 2016 into 2017. Where wouldn't you want to go? There are a lot of opportunities around the country.

AB: For many airports, Delta Connection service may be their best chance to get flights. With all the competition among the airports out there to get that service, what does it take to get your attention these days?

BC: What it takes is more about the economic prospect of an area. We've been building up what we call focus cities like Raleigh, [North Carolina] or Boston. We're building those cities where we see are economic engines with good population growth. When we see all-around strength in those types of cities, we start adding flights. A lot of times it's not airports that come to us; we are going to airports.

AB: Many airports have teams that do a lot of research and create data that they present to airlines. Of course, the airlines do their own research. What's the split between the data that Delta uses to research cities and the research that airports and cities present to Delta?

Bob Cortelyou, senior vice president of network planning, Delta Air Lines.
Delta Air Lines

BC: The reality is when a city comes to visit us, we want to know more about the people in that city. We have our numbers and they've

got theirs. They can hire consultants, but we have our own people here that are going to do the same and have access to even more data. If there is a city that is looking for service, then we want to know what's happening in that city. What are the people doing? What's the economy doing?

Airports should be thinking more globally about where we go because we are a large carrier in the U.S. and we serve major domestic markets. On a global scene, there is still a lot of potential out there. And it's not just for us with our own metal, but through our partnerships. We've got our friends at KLM and our Virgin Atlantic partnership that's been incredibly successful. We just got approval to expand our joint venture with AeroMexico. We also have a strong partnership with GOL in Brazil. We're working very closely right now in Asia with China Eastern and Korean Air.

It's always fun putting a dot on the map, but it strengthens the overall global picture when we have these important relationships and joint ventures not only for us, but for consumers, who get so many more options.

AB: A lot of cities offer incentives to get airlines to come to their airport. How important are those incentives as part of an overall package to get Delta to come to a city or expand existing service?

BC: It's not necessarily going to make the decision for us. One of the challenges that incentive programs can have is that they'll offer us money for service. But at the end of the time, if it's not working, it's a bad mark not only on the city and the airport, but also on Delta.

Delta is spending $3 billion on the new terminal at LaGuardia International Airport, which is targeted at continued growth in the market. *Delta Air Lines*

So, it goes back to your original question. We want to know what we expect the outcome of that city is going to before we go. We want to be sure we are going to be a success without incentives. One of the worst things for us would be having to keep going back to an airport and say we need more [money]. That's not good for Delta or the community.

There are cities that hire consultants who will tell them how to get service and then don't. The airport director is under pressure from groups like the city council or the airport board. You can throw a lot of money at it, but keep in mind that we don't like going in and then out. It's not fair to the cities and it's not fair to our customers, so I think you've got to figure out what really works beforehand.

AB: CEO Ed Bastian spoke about Delta spending $3 billion on the new terminal at LaGuardia Airport, along with spending money to upgrade Terminals 2 and 3 at LAX and the Minneapolis-St. Paul hub. Why are these investments so important?

BC: These investments are important for us because we have the growth, but we also have to have an experience for our customers that is good. We don't want them to be in crowded terminals or places where they are unhappy. We want to have the conveniences that travelers are looking for. If you look at us, we have airport investment projects going on almost everywhere. LaGuardia is happening and at Los Angeles, we are actually moving and renovating. We're moving from T5 and T6 over to T2 and T3, and we will be renovating them. We have a big project in Seattle and Salt Lake City is building a new terminal.

We need to be out there for future capacity growth. And more importantly, it's needed for the travel experience for our customers. And for our employees, it feels much better working in a new terminal. You probably feel that way too. If you walk through a new terminal it makes your day a bit brighter.

AB: What are your priorities for 2017 going into 2018?

BC: We're going to keep building on all the cornerstones that we have, whether it be our network or our operational performance. We're also going to continue to invest in products, people and our customers. There's so many areas for us to go. Delta is in a great position for the future and 2017 is going to be a great year.

Delta looks at the local economy of a region when determining service to see if it's an area that makes sense to add additional service. *Benet Wilson*

Can Competitors Survive If Amazon Enters the Logistics and Transportation Industry?

With Amazon building a facility at CVG, what will this mean for traditional transport companies across North America?

Amazon recently unveiled plans to build a $1.5 billion air cargo hub at Cincinnati/Northern Kentucky International Airport (CVG) to accommodate its growing fleet of Prime delivery jets. Similar to the way Amazon initially developed AWS to meet its own cloud needs, then offered it to the public, this initial cargo hub is probably only the tip of the iceberg for Amazon delivery offerings in the future. How will this affect the traditional transport and delivery giants like FedEx, DHL and UPS, the mega-retailers, and the users of these services?

When Amazon, one of the largest retailers and movers of goods, chooses to move transportation and delivery in-house instead of outsourcing to other carriers, it eliminates business as usual with today's supply chain businesses and impacts the way the third-party carriers plan for future growth. Traditional carriers can no longer "rest on the laurels" of their previous successes. They will have to look for ways to provide more value, including better reliability, efficiency, speed and convenience, to their customers at a lower cost. This will be challenging for companies that aren't as dynamic and innovative as Amazon and perhaps culturally, aren't willing or able to take risks like Amazon.

Carriers won't be the only businesses that will be forced to evolve if Amazon's expansion into transportation and logistics comes full circle. Retail giants are already investing in providing an improved delivery experience for the on-demand economy. Back in the day, Wal-Mart did some amazing first-of-its-kind practices from how they managed stock in their warehouses and stores vis-a-vis their suppliers, to using jets to efficiently move management around. Many competitors followed suit. Now Wal-Mart is the one following Amazon, further evidenced by its recent acquisition of Jet.com and clothing line, ModCloth. What's more, Wal-Mart is now trying to 'one up' Amazon on its two-day shipping by offering it for free with no memberships fees. Nordstrom, the epitome of in-store (brick and mortar store, of course) customer service, tried to get in on the online trend, but had much less success than they had hoped, recently laying off a significant part of the tech team. This is just a small sample of what is yet to come. These moves are creating an environment ripe for innovation, convenience, higher value and service levels, where it was once not possible.

All this competition and innovation creates opportunity and increased demand for companies supporting the transportation and logistics industry. Manufacturers of airplanes (Boeing got the 767 deal for Amazon's Prime Air), trucks, drones, bots, pallets, dollies, loading equipment, cargo tracking, uniform makers…and the list goes on. Individuals and businesses shipping packages will also benefit. If Amazon enters the shipping industry, businesses will now have another great option to select from when shipping their packages and goods. Moreover, this new entrant will force moves toward higher levels of efficiency at lower costs at the other carriers as well. Thus, shippers (be it companies or consumers) will benefit.

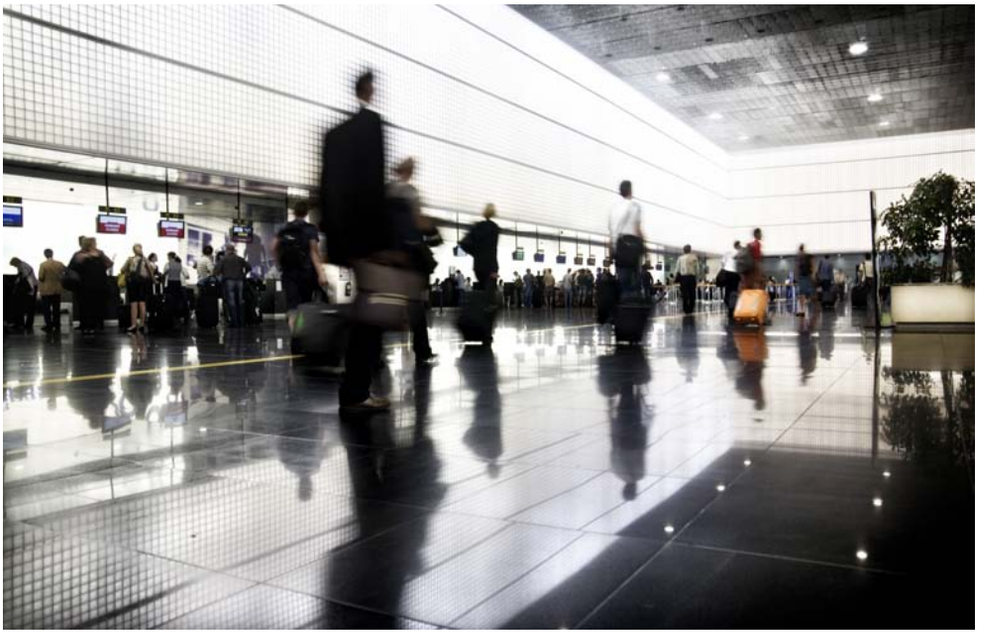
So, is it likely we'll see Amazon enter this market and drive change? If the evolution of AWS is any indication, yes. Prime Air and the new cargo hub will work to solve Amazon's fulfillment and logistics needs, but are easily extensible to future ecosystem players in the supply chain. CVG is nicely positioned for this due to location and potential reach. When setting up a hub of this size, with potential growth projections, an airport conveniently located to fly short and long distances is a plus. It needs to be easily accessible both by air and by ground (so that trucks and vans can easily and quickly access the hub). Following CVG, we may see Amazon open a similar hub somewhere in Asia to accommodate the cargo they ship from the region. China, Vietnam or another key manufacturing arena would be probable. After establishing the two intial hubs and officially entering the logistics and transportation industry as a provider, Amazon may look to expand across the U.S., Asia, Europe and other regions as they grow.

By Dheeraj Kohli

4 Ways Beacon Technology Can Benefit Airports and Travelers

Beacon technology provides valuable information in the age of smart phones.

Today, more people rely on their mobile phones than ever before and this is especially true when it comes to our travel experience. In the age of the smartphone, these devices not only allow us to download boarding passes and check in for flights in advance, but also to shop, surf and catalog our travel experience on social media.



Mobile devices offer consumers more flexibility and entertainment options for their journey, but our reliance on our smartphones – and the data generated by our usage – also presents a huge opportunity to airports. It has been estimated that 90 percent of the world's data has been created in the past two years; however, the vast majority of that data is unstructured, leaving many businesses, including airports, trying to figure out the best way to collect and analyze this data to better inform how they operate.

The technology that can help airports leverage our mobile reliance into tangible business benefit lies in beacon technology. Beacons are small wireless devices that broadcast a short-range Bluetooth signal, which is detected by an app on a mobile device as it comes in proximity to the beacon. The detection can trigger notifications, open web pages, or push advertisements directly to that mobile device. A passenger need only download an app, which most airports already have developed.

Though it may seem trivial, the reality is anything but. Here are four ways that this technology can benefit both airports and travelers alike:

- **Real-time Updates and Navigation:** Airports can use beacon technology in conjunction with mobile apps to deliver real-time "day of travel" information directly to

Beacons also generate information about passengers, airlines and baggage that can be key to effectively planning service capacity, resources and staffing. Unisys Corp.

passengers in the airport, be it a gate change or flight delay. For passengers connecting to another flight, beacons can help the airport communicate directions straight to the traveler's smartphone. As a traveler arrives at his connecting airport terminal, the beacon would be pinged by the app on his phone and the airport could instantly send him the details and directions to his next flight, bypassing a crowded information kiosk.

- **Generating Non-Aeronautical Revenues:** Beacons can also help promote dining and retail – a priority for many airports in growing their non-aeronautical revenue. If a travelers arrives in a terminal 90 minutes before his connecting flight, the beacon there could send him information on nearby dining options, along with a coupon for 10 percent off his meal at the new high-end restaurant in the terminal. Data generated by beacons can also help airports and their retailers gauge how they're performing. For example, if a beacon in one end of Terminal 1 is pinged 10 times more than the beacon at the other end of the terminal, the airport or retailers see the problem in real-time and can try to incentivize traffic to the slower shops via promotions or discounts sent to their phones.
- **Passenger Flow Management:** Beacons also generate information about passengers, airlines and baggage that can be key to effectively planning service capacity, resources and staffing. For example, if an airport sees a high volume of travelers ping a beacon around security checkpoint 3, with a relatively low volume of people pinging the beacon at checkpoint 1, resources can be diverted to either move passengers to the less crowded security line or provide additional staff at the busy location. This not only creates a more harmonious experience for the airport and the traveler, but the data can also be used to generate predictive models that can allow the airport to better plan for and allocate resources where they are needed most, before there is an urgent need to do so.
- **Improved Operational Efficiency:** In addition to passenger data, beacons can also help airports track their own employees. If an airport or airline experiences a problem near one of their gates, the airport can check and see which employees ping the beacon near where the problem is. This allows for a faster and more efficient response to problems as they arise. Additionally, beacons can help detect if any employee or individual tries to access an area that they are not supposed to, which can help ensure proper airport security.

Mobile devices offer consumers more flexibility and entertainment options for their journey. Unisys Corp.

Beacons can also help promote dining and retail – a priority for many airports in growing their non-aeronautical revenue.
Unisys Corp.

As for the security of the beacons themselves, most beacons come with different security features – many of which are customizable. Depending on the application in which you use your beacons, there are several ways to ensure that the data being generated is kept secure.

In the age of the connected traveler, being able to directly engage with customers where they are already playing can be a major differentiator for any airport or airline. Not only do beacons generate analytics that can provide airports with an opportunity to improve the experience they offer to their travelers, but the data generated can help airports bolster their own efficiency, organization and most importantly, their profitability.

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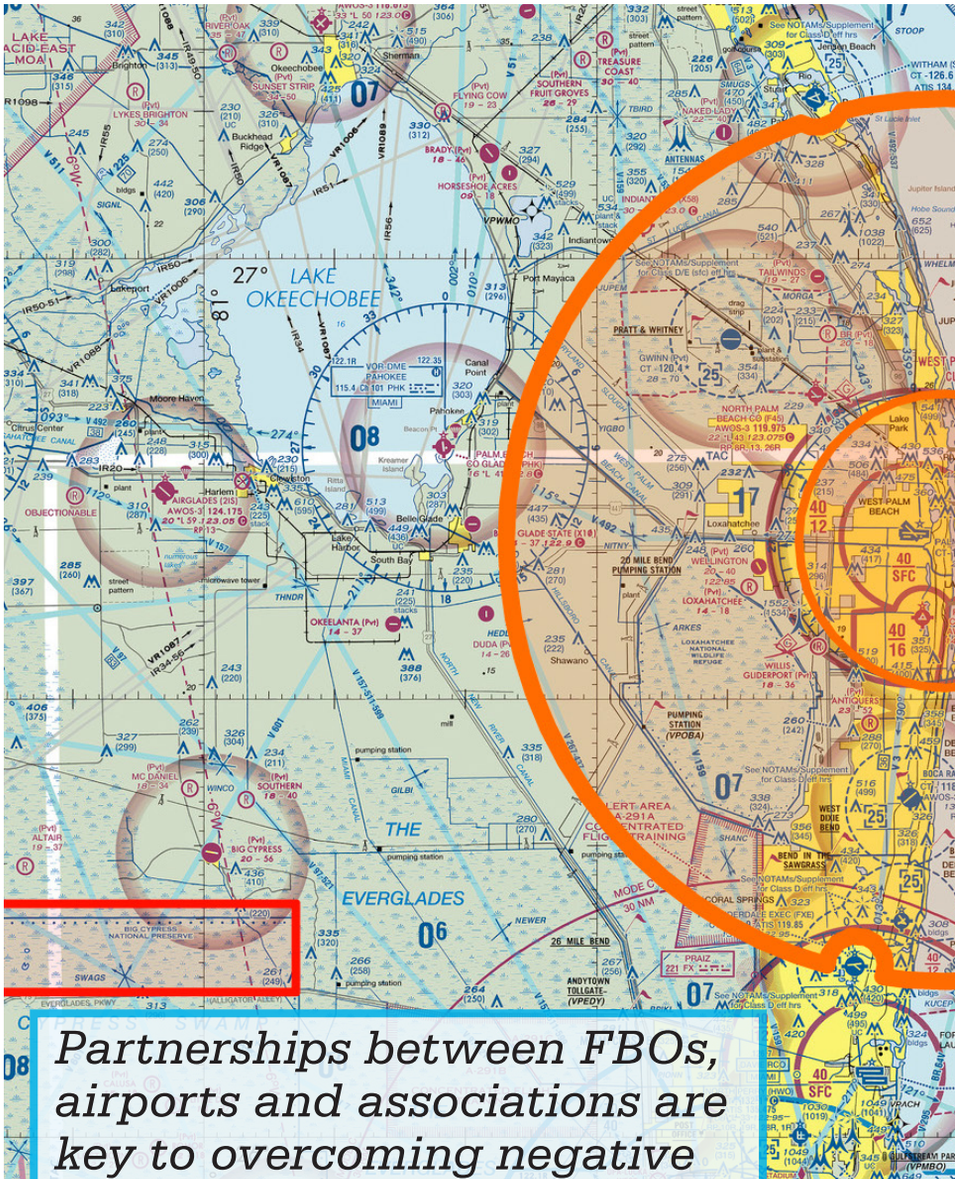
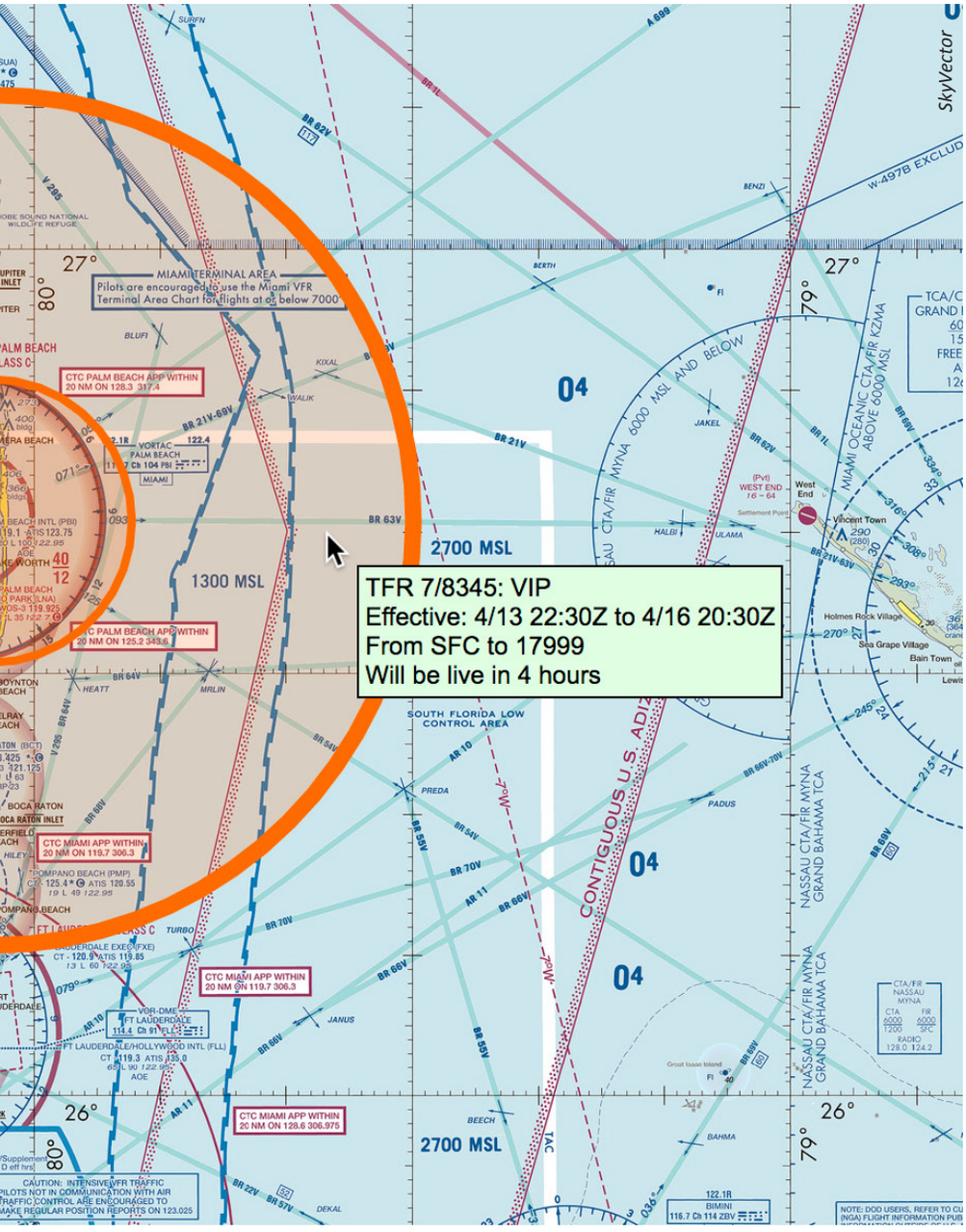
By Douglas Wilson

Best Practices in FBO Management: TFRs



In the weeks since taking office, the current president of the United States (POTUS) is on track to outspend his predecessor by an unprecedented amount- on his personal travel alone. Some seven weekends have been spent at President Trump's Mar-a-Lago luxury resort, and an eighth – Easter Weekend- will have



come and gone by the time this article goes to print. In the first 10 weeks of his presidency, Mr. Trump's vacation budget eclipsed that of Mr. Obama's first two years. At least if Bernie Sanders had been nominated and won the presidency, there'd be a few Weekend at Bernie's jokes to spice up the unending political commentary regarding presidential vacations.

Regardless of who holds the office, what assets are figured into the cost of a weekend vacation for a commander in chief? Typically that would include the cost of Air Force One, one or two C-17 Globemaster III support aircraft, a UH-60 Blackhawk (acting as Marine One) and various ground support vehicles- the motorcade. Plus of course, manpower costs of the Secret Service and other security personnel must be factored in. According to estimates, the average price tag is about $3 million per weekend getaway. And that excludes hotel and the minibar. Yet, to local airport business like FBOs, as well as aircraft operators affected by the attendant Temporary Flight Restrictions (TFRs), the cost is much, much higher. TFRs can be quantified in lost revenue, lost jobs and an eerily quiet airport.

Despite the rhetoric that seem to accompany presidential TFRs, the issue is not partisan by nature. Bush vacationed at his ranch in Texas, Obama in Hawaii. TFRs have now affected the aviation industry for some time; and a great many airports in the US are affected by the movement of POTUS each year. What is different in this case is that no previous president had a personal retreat in a major vacation

destination, close to major airport – a mere 2.1 nm from Palm Beach International (PBI)- and visited said retreat so frequently back-to-back, during the peak tourism season. At a certain point, the word "Temporary" in the acronym TFR loses its meaning.

So, what can an FBO do during a TFR? What recourse is there for lost revenue- and by extension- lost jobs? The answer for now, is very little. That doesn't mean FBOs or airports should go quietly into the night. It is up to the industry collectively to band together, make noise, and to petition to local, state and federal government agencies to seek relief – or at least hear their pleas. Several industry groups, both national and local are fighting the good fight, though most efforts are directed to the benefit of aircraft operators under the larger umbrella of "airport access issues" as opposed to fighting for FBOs per se.

Chris Salley, board vice president of the South Florida Business Aviation Association (SFBAA) and sales and marketing manager for Ft. Lauderdale-based National Jets notes the SFBAA has teamed up with the Florida Airports Council, the Aircraft Owners & Pilots Association (AOPA), the Florida Aviation Business Association (FABA) and other "alphabet groups" to form a general aviation caucus to speak as a unified voice regarding the issue of TFRs. Working with the state legislature, Salley notes the caucus has been making efforts to "promote awareness of the effects the TFR." To be sure, while the TFR itself is an overarching problem for operators and airport tenants such as FBOs, "specific aspects of the TFR are particularly troubling" adds Salley. These include the short notice nature of them and complete shutdown of nearby Palm Beach County Park Airport (LNA), commonly referred to as Lantana Airport, among others.

The current Presidential TFRs that affect Palm Beach International require non-airline operators [Read: General and Business Aviation] to arrive to PBI via five select gateway airports, after being screened of course. For those GA flights departing PBI, security screening is also required. These rules create a domino effect of sorts: Aircraft operators, restricted in their use of the desired airport of their destination, tend to go elsewhere. Based tenants of FBOs also reposition their aircraft to outlying airports resulting in still fewer fuel sales at the affected airport. Airports are not immune either from the negative effects of a TFR, as fewer gallons sold by an FBO result in lower flowage fee revenue for the airport. This begs consideration by airports as to their role when TFRs affect them and their tenants. While airports can't make TFRs go away, airports are wise to band together with their tenants, aircraft operators and industry alphabet groups to educate those with the power to alter or amend some of the more draconian aspects of TFRs. In the most basic sense TFRs severely restrict an airport tenant's ability to fulfill its leasehold obligations- to make the rent. An airport disengaged from the plight of its tenants might find those same tenants, aircraft operators and industry alphabet groups instead banding together to petition the airport for rent abatement or concessions.

Like elections themselves, there are winners and losers with TFRs. Those in the winner column with the PBI TFRs include nearby Boca Raton (BCT) to the south and Stuart (SUA) to the north, which become the closest towered airports with sufficient infrastructure to handle business jet aircraft outside the 10nm ring. In the loser column of the TFR outcome is Lantana Airport, which is effectively closed entirely during the TFR. With a high tempo of flight taining activity, this airport has some 250 based aircraft, and averages no less than 100,000 flight operations a year according to the FAA statistics. And it is closed to all flight operations when the President is in town- some eight weekends so far

Cryptically, the National Business Aviation Association, also in the trenches of the TFR battle recently noted on its website that "options to allow limited operations are being reviewed" for the frequently-shuttered Lantana Airport. That such hope exists at all is because of the tireless work of airports, FBOs and industry groups banding together to appeal to lawmakers to consider a more common-sense approach to TFRs.

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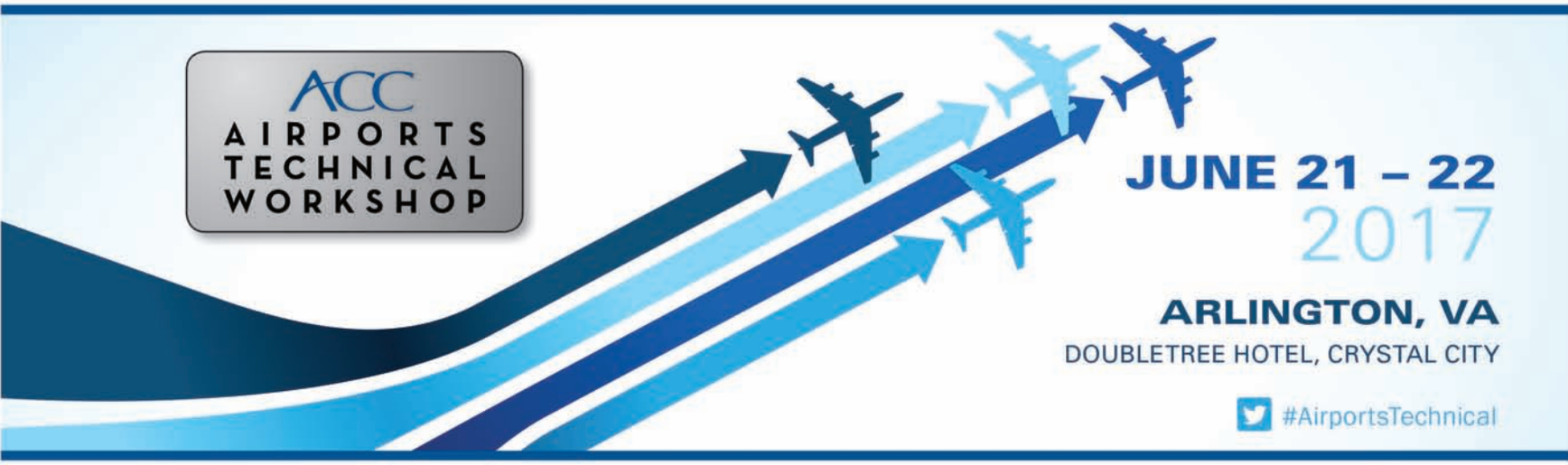

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