PASSENGER TERMINAL WORLD

JANUARY 2023

Biometric design
Experts predict how biometric technology will shape the future of airport operations and design

IT investments
Current trends and how to get the most for your money

Biodiversity
The role of airports in protecting and promoting the local environment

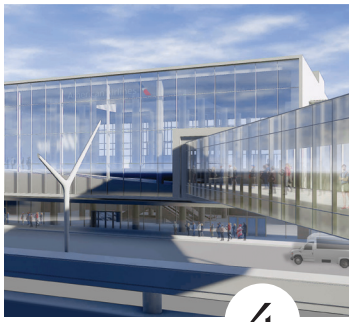
Rich pickings

WHY LUXURY BRANDS REMAIN A VITAL PART OF THE TRAVEL RETAIL CHANNEL DESPITE A CHANGING PASSENGER MIX

See page 76

Also inside:

SHOW PREVIEW
Passenger Terminal EXPO 2023



4

24

Cover story

High-end hopes

Luxury remains a staple of the travel retail channel despite a changing passenger mix

12

UPDATE

4 **At the core**
LAX completes first phase of its US$1.6bn Terminal 4/5 modernization program

6 **Tech on trial**
Toronto Pearson becomes the first Canadian airport to test a walk-through security detection portal

8 **Eco system**
Edinburgh Airport installs technology to identify untapped wind energy

10 **Auto drive**
Phoenix Sky Harbor offers the world's first rider-only autonomous vehicle service at an airport

12 **Make a connection**
Integrating technology should be a priority for the travel industry, says AirPortr's Randel Darby

16

40

FEATURES

CASE STUDY: ZURICH AIRPORT DOCK A

16 **Nature calls**
The world's largest timber-built airport development combines passenger comfort and sustainable design

INTERVIEW: CHARLOTTE DOUGLAS INTERNATIONAL

32 **Southern charm**
Jack Christine explains how a US$3.1bn capital improvement program will futureproof the airport

BIOMETRICS

40 **Digital designs**
The impact of biometric technology on airport terminal design and operations

CASE STUDY: FUKUOKA INTERNATIONAL AIRPORT

48 **A warm welcome**
A terminal expansion project will ensure Fukuoka is best placed to welcome international travelers once again

FOOD & BEVERAGE

54 **Bread & butter**
London Stansted's multimillion-dollar refurbishment will sustain the business for years to come

IT INVESTMENT

62 **Smart spend**
A look at current IT investment trends and best practice for getting the most for your money

BIODIVERSITY

68 **Natural world**
What role do airports play in protecting and promoting the biodiversity of their local area?

PASSENGER TERMINAL EXPO 2023

76 **Time to go Dutch!**
The must-see technologies on show at Passenger Terminal Expo in Amsterdam, Netherlands, March 14, 15, 16, 2023

SUPPLIER INTERVIEWS

94 **Bahrain Airport Company**
Bahrain International was voted the world's best new airport by Skytrax in 2022

95 **Henderson Engineers**
A progressive approach to design and engineering is shaping the aviation industry

96 **Groupe ADP**
How to ensure sustainable runway refurbishment and construction works

KERI ALLAN ■

Smart SPEND

The right IT investment can make a huge difference to an airport's operational efficiency, but how do you identify what to invest in? *PTW* explores current IT investment trends and best practice for getting the most for your money

SPENDING ON **DIGITALIZATION AND SUSTAINABILITY** WILL INCREASE BY 2024

Airports continue to turn to IT as a means of optimizing operations, as highlighted by the wave of recent investment announcements from the likes of Avinor, Manchester Airports Group (MAG) and Vancouver International Airport (YVR).

SITA's most recent *Air Transport IT Insights* report revealed that airport operators are betting on technology to support their recovery from the pandemic, with a significant increase in spending on digitalization and sustainability as key priorities by 2024.

The report noted that airport CIOs and CTOs expect to spend the same or more this year than in 2021, with a particular focus on sustainability – which can include making operations more sustainable – and passenger process automation such as self-service features and identity management driven by biometrics.

"Airports and airlines can achieve significant emission savings almost immediately while futureproofing their organizations by investing in cutting-edge technologies that deliver these efficiencies," comments Sébastien Fabre, CEO of SITA for Aircraft.

The benefits of automation

Automation can have a positive impact throughout an airport, including addressing the staffing issues many currently face.

"Staff shortages are not uncommon across the industry right now, as we have particularly seen with baggage handling, so many of us are looking at automation wherever possible," explains Maurice Jenkins, digital strategy and innovation advisor and chief innovation officer at the Miami-Dade Aviation Department. "I do think we have a responsibility to see where we can use innovation to solve some of our staffing deficiencies.

"Currently we're looking into autonomous vehicles and robotics. But let me be clear – this is specifically to address shortages and not in any way to replace staff," he continues. "It's to enhance the business and make sure our staff can work safely and efficiently, while also minimizing the impact of employee injuries and downtime."

Automation also has the added benefit of enabling staff to focus on activities that offer the most impact. "You only have to look at other industries to see the benefits of automating some tasks," comments Ryan Cant, MAG's chief digital officer. "We're looking at ways in which our operational colleagues can be freed up to spend more time with our passengers face to face, rather than having their working day consumed by repetitive administrative tasks that could benefit from automation."

Better deployment

Technology can also help optimize staff management, something that's key when you're dealing with limited resources. This is where it comes into its own, collecting and analyzing data to better predict where your staff will be most needed.

"When you think about what it takes to make an airport operation run, what you've got is a big data problem," says Cant. "What demand are we forecasting during each time slot? What does that mean in terms of operational assets we need to have ready to serve that demand? And then, how many people with what skill sets do we need to operate those assets? We believe that data-led, automated decision tools that are machine-learning driven can promote significant improvements in working out who we need, where and when."

YVR recently launched a digital-twin platform to support operations by tapping into historical and real-time data sources to help the organization make data-driven decisions to plan and work effectively in the present.

Its guest-experience team uses the digital twin to plan and map out effective staffing levels and deployment as the operation dynamically changes throughout the day. Providing live situation awareness via an iPhone app, staff deployment dynamically adjusts to pinpoint high passenger demand areas throughout the terminal.

In tandem with this, several other tools were developed to help support the YVR guest-experience team. This includes the Line Buster app, which helps identify which passengers need to be prioritized in security lines, and the One Stop Security (OSS) app, which identifies when connecting passengers need to be rescreened to avoid a security breach.

ABOVE
Miami International Airport's 102 mobile inspection tables autonomously receive bags that require additional screening and deliver them to 52 TSA inspection stations

BELOW RIGHT
Travelers can try out new technologies at San Francisco International Airport's dedicated facility for tech innovation

"While these apps are not directly in the hands of passengers, their experience will be changed as our team can better respond and be present at congested points instantly," explains Lynette DuJohn, VP of innovation and CIO at Vancouver Airport Authority.

What should I invest in?

We've seen just a few of the benefits technology can offer, but with so many options available to them, what exactly should CIOs/CTOs invest in to improve their airports' efficiency? According to vendors, this will differ from airport to airport, depending on the level of digital maturity and culture.

"It comes down to how much you've already invested in. It's a good idea to start with an inventory of what you have and how you're actually using it. From there you can look into the different technologies you could implement that will make your operation run more smoothly," advises Kasper Hounsgaard, CEO of Copenhagen Optimization.

Vendors also recommend a change of mindset; IT leaders should move away from a siloed best-of-breed departmental focus to thinking about developing an airport-wide IT ecosystem. "Something that breaks down the silos and brings overall optimization of their operations across the entire airport," explains Yannick Beunardeau, head of airport IT, EMEA at Amadeus.

Moving into his new role overseeing innovation and digital strategy gave Jenkins the opportunity to step back and look at Miami Airport's processes end to end. This enabled him to find the low-hanging fruit that could lead to quick fixes and also ongoing issues that needed to be addressed. From there he and his team looked at solutions and proof-of-value pilot programs to help decide on the next steps.

"It used to be whoever screamed the loudest would get the technology. Now we look at what will satisfy the biggest need – so basically getting the biggest bang for your dollar and then building a solution around that," he explains. "No longer do we invest in one-off solutions; we look at how a technology investment will fulfill multiple needs."

This is a similar approach to that taken by MAG. Increasingly, Cant's team is trying to shift toward a more product-led approach, where investment into capabilities is seen as a continuous cycle, building out products that have a number of features.

AVINOR'S INTEGRATED PLATFORM WILL **OPTIMIZE OPERATIONS ACROSS 40+ AIRPORTS**

> It's a good idea to **start with an inventory of what you have** and how you're actually using it
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> Kasper Hounsgaard, Copenhagen Optimization

> When you think about what it takes **to make an airport operation run**, what you've got is a big data problem
>
> Ryan Cant, Manchester Airport Group

MAG is currently investing in several areas, both across the back office to drive automation that scales the business without introducing structural cost, and on the airfield to optimize on-time performance. One of Cant's key projects is digitalizing the way MAG does planning and forecasting across its airports so that it optimizes its operation.

"We're working with Copenhagen Optimization to embed some of its existing tools into our airport technology stack, and then we're co-developing a module for its Better Airport software, named Better Shift," he says. "We believe that in time it will transform how we plan and structure flexible shift patterns to meet passenger demand. This will mean less manual effort for our planning teams, a more consistent approach for our front-line colleagues, and a better overall passenger experience as a result of the operational stability. The tool will also work out how we better communicate to our teams what the plan for their day on shift is, ahead of time."

A similar project has been completed at YVR, where the airport has adopted Amadeus's cloud-based Amadeus Flow for improved passenger – and staff – management. And over in Norway, Avinor has begun a partnership with Veovo to develop an integrated platform that will forecast, plan and optimize operations across all areas of its 40+ airports.

In the past, forecasting has required a lot of data input by staff. Veovo's solution uses machine learning to gather and analyze data with minimal human interaction. And, as the forecast is continually updated with live data, airports can predict changes sooner and adapt plans accordingly.

"The solution we're partnering in will cover a range of use cases, with the aspiration to forecast pretty much anything, anywhere in the airport over time," says James Williamson, Veovo CEO. "We're already live, starting with passenger security, immigration forecasting and capacity management, but aim to go on to predict everything from baggage to PRM transport

EXPERT ADVICE

CIOs SHARE THEIR TOP TIPS ON HOW TO IDENTIFY THE BEST AREAS FOR IT INVESTMENT

Sjoerd Blüm, Amsterdam Airport Schiphol CIO, advises: "When identifying areas for IT investment, always think across three lines – products, foundation and guardrails. For products, ask what digital products you can build or buy to drive value across all aspects of the business. Foundation-wise, ask what tech and data foundation you need to have in place to carry these products, leveraging market and insider knowledge on what's needed for reliability, flexibility and scalability. Finally, with guardrails, ask yourself how to secure quality – in IT architecture, cyber processes – across production and foundation, connecting to your business standards for safety, 24/7 operations and ISO quality standards."

Ray Ricardo, acting CIO, San Francisco International Airport, says, "Investment in staff should be near the top of the list. Whether you're executing technology internally or managing outside resources, an effective team is important. Seasoned IT business analysts are invaluable. Stay close to the business and develop those relationships. Understanding business objectives and outcomes can be the foundation for technology investment and innovation. Align with high-performing technology partners to augment internal expertise."

Lynette DuJohn, VP of innovation and CIO at Vancouver Airport Authority, suggests, "Be agile. Don't try to figure it all out and have all the answers up front. When it comes to building technologies like a digital twin, it's important to understand that it's not one standalone piece. It's imperative to have an existing data infrastructure; from there you have a platform founded in data and can build specific use cases that add value to the organization. Additionally, it's important to build a team that has an entrepreneurial spirit and have a genuine curiosity and eagerness to learn."

Maurice Jenkins, digital strategy and innovation advisor and chief innovation officer at the Miami-Dade Aviation Department, comments, "You need to have your finger on the pulse of your airport's entire ecosystem and examine what has taken place in order to formulate how to deliver the best-possible solution for the environment as a whole. This can be challenging, but if you do this you'll get the most value from your investment as you'll no longer be working with disparate systems."

Ryan Cant, MAG chief digital officer, advises, "Ensure you're aligning investment and technology design decisions with the core functional flows of your business would be my top tip. We've shifted our operating model in technology and rallied all our stakeholders around thinking about end-to-end customer journeys, aircraft journeys and colleague journeys. That not only brings the tech to life for people but it also helps to structure design and prioritization thinking."

TOP TECH TIPS

ARORA'S TEAM OF ASSET DATA EXPERTS HAVE COMPILED THEIR TOP CONSIDERATIONS FOR THE IMPLEMENTATION OF IT FOR AIRPORTS LOOKING TO ACCELERATE DIGITAL TRANSFORMATION AND OPTIMIZE OPERATIONS

1. Begin with an audit of the data you are already collecting – does your organization utilize robust enterprise asset management (EAM) software and/or collect geographic information system (GIS)/building information model (BIM)/asset data? Operational excellence starts with good data, and to leverage the technologies necessary to optimize your operations and asset management, you need to start with an accurate, complete virtual representation of your physical facilities and systems.

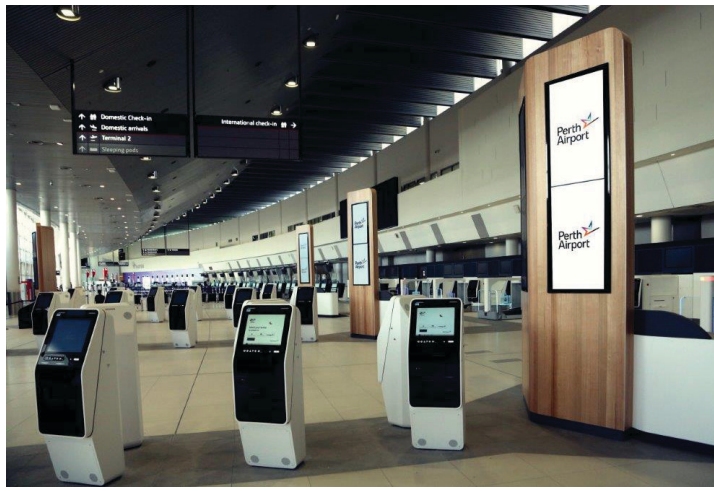
2. Establish clear operational and reliability goals. What are the priorities of the functions you are trying to optimize (public safety, customer satisfaction, cost per take-off, etc)? Which critical systems have the greatest effect on those measures (airfield, baggage handling, HVAC, etc)? With that understanding, you can lay the foundation and prioritize a roadmap for what you need to get in place for both immediate impact and continuous improvement.

3. Invest in your foundational data. Save time and money by establishing data interoperability standards that de-silo your data in the capital development phase, allowing it to be used and deployed by multiple departments and advanced enterprise systems (enterprise resource planning, building management system, EAM, GIS, digital twin, predictive maintenance, augmented reality/virtual reality, etc). Then, carry these data standards throughout the lifecycle of your facility (including tenant work) to ensure the technologies achieve the desired outcomes.

4. Maximize the value and efficiency of your assets by implementing an easy-to-use mobile solution like Arora ATLAS for your technicians who are in the field performing and recording critical maintenance activities and inspections on the go. This data helps reduce operational expenses, streamline a single business process across all departments and improve the experience of technicians and airport guests alike.

The most important thing for airports to consider is that technology alone is rarely ever the full solution. Organizations need to look at the underlying business processes associated with the new technology and understand if they need to change or improve to allow the technology investment to thrive. Arora's Enterprise Solutions Group specializes in business process consulting, the most essential element of any innovative technology deployment, to help its clients figure out how they will use the new technology and data collected to improve passenger experience outcomes.

The ATLAS suite of mobile products is designed to simplify and enhance asset management



Perth Airport is trialling Amadeus's biometric technology that enables passengers to use their face as a boarding pass

THE ULTIMATE GOAL IS TO CREATE **A TOTAL AIRPORT MANAGEMENT/ OPERATIONS SOLUTION**

requirements. Basically we want to be able to predict anything that will enable the airports to make better decisions and become more efficient."

The ultimate goal

Several IT leaders have created, or are in the process of creating, centers of excellence and innovation hubs that bring together all stakeholders to look at the use of technology across their airports. Jenkins, for example, is looking at virtual queuing and passenger bag drops as a way to enhance customers' journeys through the airport and give them more control.

In response, vendors are developing technological solutions that will support this focus on the customer experience. Amadeus, for example, has already implemented its first touchless self bag drop at London Heathrow that uses proximity sensors to enable passengers to check in their luggage without touching the screens on the kiosks. The solution can weigh baggage and uses sensors to control the bag's movement through the baggage handling system as long as it meets the necessary requirements. The ultimate goal, say vendors and CIOs/CTOs alike, is to create a total airport management/operations solution. This is where all the pieces of the puzzle – in this case technical solutions – slot together to create one overarching system that can optimize operations in a way that provides a great experience for passengers throughout their airport journey, while improving sustainability and income generation.

"If we know with, say, 98% accuracy what's going to happen in an airport, why wouldn't we share that with passengers? We could use the intelligence we've gathered to invite passengers to book a specific time slot and spot to park their car, travel through security, and even book a table at their restaurant of choice," comments Hounsgaard.

"We can manage the passenger flow through the airport and remove bottlenecks, all while improving passenger experience. This is likely to free up their time to explore and possibly spend, which could lead to more revenue generation. This seems like a win-win to me."

istockphoto

LEFT
Long queues heralded the turbulent return to air travel after the pandemic

The wait is over

Thales explains how a combination of biometrics, AI and identity management is key to improving passenger experience and airport efficiency

A safe, hassle-free airport experience is every traveler's dream. Yet the pathway from check-in to take-off can sometimes resemble an obstacle course. In recent months, the patience of many passengers was put to the test as the aviation industry struggled to cope with the influx of travelers as pandemic restrictions lifted. Cancellations, staff shortages and caps on flight numbers heralded the turbulent return to air travel. This translated into endless queues, with the wait time required to clear security at some airports being as high as four hours. The result was increasingly frustrated and dissatisfied passengers, and airport and airline staff under enormous pressure. With IATA predicting that passenger numbers will reach four billion by 2024, something must change.

The reality is that the journey through the airport has become a repetitious process of either waiting in line or presenting documents. And in an era where self-service and automation are the order of the day, it is hard to motivate passengers to just simply wait.

Transforming the airport journey

Against this backdrop, airports and airlines are eager to meet evolving passenger expectations. But in this quest, they must find the balance between achieving operational efficiency and ensuring robust security, all while providing the best traveler experience. Thankfully, technology use cases involving biometric authentication, artificial intelligence, digital ID and automated document verification are providing ways to address all three concerns.

First on the agenda is eliminating the need for passengers to show physical documents. To this end, digital ID technology enables passengers to create a digital travel credential. With their consent, this is combined with their check-in information to generate a single ID token. As a bonus, this step can be completed before the passenger even arrives at the airport, reducing the need for queuing at the check-in counter.

Next, speeding up passenger processing. Thanks to their single ID token, passengers are identified in seconds at all the checkpoints in the terminal, simply by presenting their face. Here, biometric authentication enables throughput that is not only quicker but also instinctive and easy for travelers, as well as highly secure.

No compromise on privacy

With less time spent queueing, travelers have more time to enjoy the airport's leisure and retail activities before boarding. When the boarding gates do open, passengers will once again notice reduced processing times, thanks to biometric boarding and their single ID token.

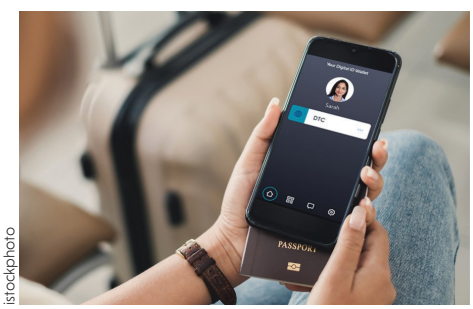
This is the end of the airport journey – and the end of the ID token. For the successful adoption of this new airport experience, passengers must be assured of data privacy and that they are in control of their data. Therefore, their single ID token, including all personal data, is deleted from the airport system after boarding while the passenger's digital credential remains safely in their possession in their digital wallet.

The future is now

The combination of biometrics, artificial intelligence and identity management has enabled effective solutions that will improve airport security, operational efficiency and passenger satisfaction. Airports and airlines are already showing interest and investing in these solutions. A number of large-scale projects are already underway, with more in the pipeline. Notable examples include the Fly to Gate solution successfully tested by Thales in several airports in the USA and Europe.

The safe, hassle-free airport experience is becoming reality. And this is a big win for all air travel stakeholders: terminal staff, airport operators, airlines and – of course – the billions of passengers who pass through airports every year. ■

Thales
READER INQUIRY 114



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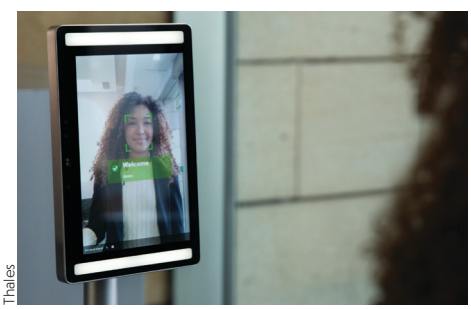
BELOW LEFT
Digital travel credentials are stored in a secure digital wallet



Thales

BELOW
Passengers are identified in seconds at all the checkpoints, simply by presenting their face

Enhanced asset management and maintenance

In 2020, Salt Lake City International Airport (SLC) began the process of consolidating its three aging terminals into a single central terminal with four concourses to better serve its more than 25 million annual passengers. SLC sought a new asset management solution to help manage the new facility's data, track inventory and maintenance records, and reduce time and resources expended maintaining assets. The airport engaged EDI to implement IBM's Maximo enterprise asset management (EAM) software in just 90 days, an aggressive schedule that ensured the components and equipment in the new terminal were properly maintained from day one. This timely accomplishment was recognized industry-wide and earned EDI and SLC the Best Maximo Enterprise Asset Management Implementation Program award at MaximoWorld 2021.

EDI's solution leveraged IBM's best-of-breed Maximo EAM software, EDI's Strategic Asset Management (eSAM) for airports configuration, and the Fix, Inspect and Request modules of the Arora ATLAS mobile solution, which integrates with Maximo to provide a seamless asset and data management system with cross-functionality across the authority's aviation facilities.

Prior to implementing ATLAS, SLC used an Excel-based maintenance work request system that entailed significant manual data entry and written location explanations for maintenance concerns. The ATLAS Fix solution improved SLC's work order process, the ATLAS Inspect solution simplified critical airfield and terminal inspections and ATLAS Request provided an easy-to-use electronic method for requesting work. With ATLAS, SLC's maintenance activities are now mapped and tied to specific assets that live in Maximo. The airport's maintenance needs and activities are displayed in an interactive dashboard that gives facility managers a comprehensive view of critical day-to-day asset activities.

Salt Lake City International Airport

Eddie Clayson, director of airport maintenance at Salt Lake City Department of Airports, Salt Lake City International Airport, said, "EDI worked with our team and got the Maximo system up and running with work orders in less than 90 days. Their mobile solution makes work orders and inspections easier and more accurate."

Arora READER INQUIRY 115