

AIR TRANSPORT

IT REVIEW

ISSUE 3 – 2015/2016

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#SITAINSIGHTS

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SMART TECHNOLOGY, SMARTER AIRPORTS.

A young girl with her back to the camera, wearing a bright blue crocheted hat and a red dress, waves her right hand. She is holding a brown teddy bear in her left arm. The background is a blurred airport tarmac with a white airplane tail visible on the right. The scene is set against a clear blue sky.

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Only SITA can deliver an integrated, common use, cloud-based, seamless self-service passenger experience, from check-in to baggage reclaim. We are leading the way with the first Airport App that anticipates passengers' needs, creating new revenue opportunities for the airport. We are breaking new ground with business intelligence solutions for Day of Operations that drive collaborative decision-making, better planning and more effective disruption management.

TOGETHER WE CREATE SMARTER AIRPORTS

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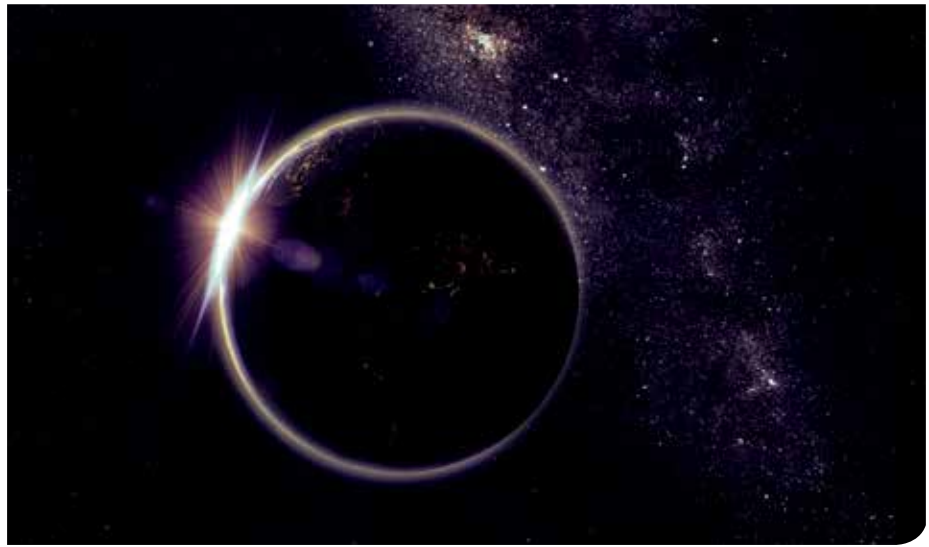
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A NEW ERA OF INTELLIGENCE

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Air Transport IT Review

Air Transport IT Review
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SAVE THE DATE

FOR THE IT INDUSTRY EVENT OF THE YEAR

24-26 MAY 2016

The next **Air Transport IT Summit** will be held on 24-26 May 2016 at the Hesperia Towers Hotel, Barcelona. Details to be confirmed.

If you're a SITA SC member you can also join us for the SITA SC 71st Annual General Assembly. SITA SC members will receive reports on SITA's performance over the last year and hear from the SITA Board Chair and the CEO on what SITA's future holds.

PASSENGERS MOST VALUE INFLIGHT ENTERTAINMENT

Passengers highly value inflight entertainment and more often than not, they would like to text and/or e-mail, get live flight information, and stream content directly to their devices onboard the aircraft.

These findings were announced during the recent APEX EXPO in Portland, Oregon, where SITA OnAir demonstrated the full potential of connected aircraft. "We can use real-time decision-making, predictive analytics, create new programs, applications and content," said Ian Dawkins, CEO of SITA OnAir. See 'Enjoy the inflight experience' page 37.

For more: www.sitaonair.aero



INDUSTRY GETS PIONEERING BUSINESS INTELLIGENCE

The air transport industry is set to benefit from the introduction of pioneering business intelligence (BI) tools, already tried and tested with a major airport.

The new capabilities offer mobile services for passengers' 'Day of Travel' and airport and airlines' 'Day of Operation'.

The new BI solution harnesses huge amounts of data and makes it usable along every step of the journey.

See 'A new era of intelligence,' page 16.

For more: www.sita.aero/pressroom

LINK-UP OFFERS BETTER PRM SERVICE

SITA has linked up with specialist provider Able2Fly to offer an easy way for airports and ground handlers to receive and manage PRM (Passengers with Reduced Mobility) notifications from airlines.

The service will help in a fast growing passenger segment in which ground handling and airport agents often don't have time to put arrangements in place, even though EU and US airports place legal obligations in support of PRM needs.

MESSAGING EXPERTISE
"We needed something that works straight out of the box, was affordable, credible and

compliant," according to Martin Quinn, Founder and Managing Director of Able2Fly.

"SITA's messaging expertise enabled us to receive XML format data via SITA's own middleware that exactly met our needs."

BEACON TRACKING
"One year later and we're working together on next stage enhancements, including tracking via beacons. This improves accuracy and ultimately gets a better service delivered to what is the fastest growing segment in aviation."

For more go to www.sita.aero and www.able2fly.com

SITA ENHANCES 'COMMUNITY VALUE'

In line with SITA's focus on providing value to the air transport industry, the company has just introduced additional benefits targeted specifically at members.

The initiative includes three new offers on the back of four introduced earlier in 2015.

The new offers relate to AirportConnect, network application performance and service management, and an IT Trends benchmark review.

Work continues on further enhancing SITA's community value. See 'SITA Membership delivers more value,' page 41.

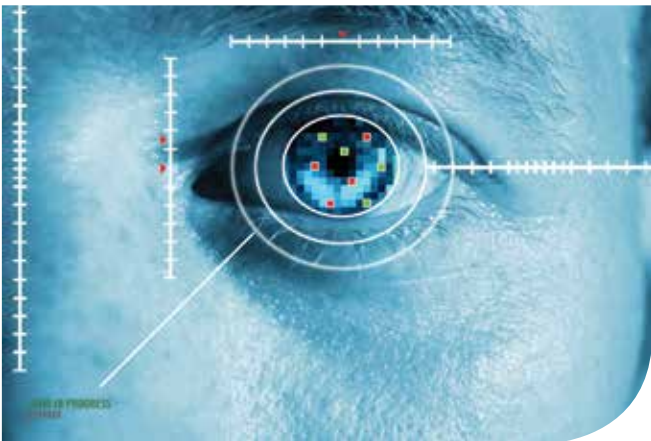


SITA ACQUIRES DELAIR

SITA has acquired delair Air Traffic Systems GmbH, provider of Airport Collaborative Decision Making (A-CDM) solutions for airports.

The acquisition strengthens SITA's position as the leader in Airport Management Systems (AMS) by offering an A-CDM product that's increasing demand by airports around the world.

Additional functionalities gained include departure sequencing, de-icing and performance management. The acquisition broadens both the reach and capabilities of SITA's Airport Management Solution, currently used by over 150 airports in 48 countries.



A FIRST IN FACIAL RECOGNITION

Orlando International Airport has achieved a first by upgrading its automated passport control (APC) kiosks to include facial recognition for arriving passengers.

The technology, supplied by SITA, is part of a new requirement from the US Customs and Border Protection for APC kiosks to authenticate identity by matching people's faces to the biometric record in their e-passport.

For more:

www.sita.aero/pressroom

READ THE FULL ISSUE ONLINE



'AIR TRANSPORT IT REVIEW' – FOR THE ISSUES THAT MATTER

Available on the new [sita.aero](http://www.sita.aero) website

See the online editions of Air Transport IT Review for features and insights across the technology issues that matter to the industry, including solutions and innovations embracing the explosion of mobile devices, cloud, big data, business intelligence, predictive analytics, new generation passenger systems, e-Aircraft, border intelligence, and much more.

For the full articles and more, go to:
www.sita.aero/air-transport-it-review

MOST USA PASSENGERS ARE 'HAPPY PLANNERS'

SITA is for the first time providing country-specific editions of its Passenger IT Trends Survey, so far including the US, UK and Australia.

The survey looks at passenger types and emotions during their journey, evaluating the impact of IT on passengers.

POSITIVE EMOTIONS

The US survey shows that up to 90% of US air travelers experience positive emotions when using self-service. It also finds that 58% are 'careful planners' who re-check their travel documents and turn up at the airport early. They also use technology for planning and during their journey.

Find out more:

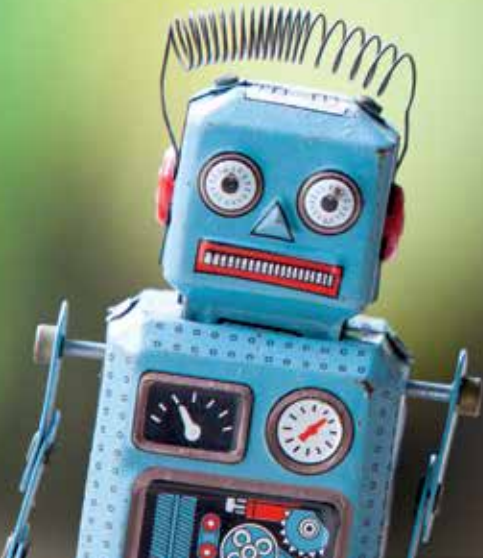
www.sita.aero/surveys

NEW AIRPORT SURVEY OUT NOW

SITA has launched the latest Airport IT Trends Survey. The 12th edition of the survey looks at data for 2015 and beyond. Responses were received from 106 airports worldwide, representing 42% of total passenger traffic.

Find out more:

www.sita.aero/surveys



THINK DIGITAL

HOW MIGHT THE NEXT WAVE OF 'DIGITAL DISRUPTION' IMPACT OUR WORLD? AND WHAT LONGER TERM TRENDS AND TECHNOLOGIES NEED TO BE ON THE RADARS OF AIR TRANSPORT INDUSTRY PLAYERS, ASKS **ROHIT TALWAR**, CEO, FAST FUTURE RESEARCH.



“WE SEE THE WORLD IN VERY TANGIBLE TERMS AND TECHNOLOGY IS AN ENABLER – IT’S THERE WHEN WE NEED IT, BUT IT’S NOT OUR CORE BUSINESS. OURS IS AN ANALOG WORLD WHERE INCREMENTAL IMPROVEMENT IS THE NORM.”

ROHIT TALWAR
CEO, FAST FUTURE RESEARCH

We’re currently experiencing a clash between two worlds. On the one hand, we have those of us who think ‘physical’. We run airports, airlines and hospitals, make houses and cars and advise on financial, legal and strategic matters.

We see the world in very tangible terms and technology is an enabler – it’s there when we need it, but it’s not our core business. Ours is an analog world where incremental improvement is the norm.

Those on ‘planet physical’ are now on a head-long collision course with a new world of people and organizations who think ‘digital’. They don’t see airports, airplanes, cars, or hospitals – for them everything is just data.

CLASH

They believe every problem and opportunity can be addressed by finding the right software algorithms and then applying the right science and technology. Digital thinkers understand the potential to scale rapidly and hence pursue goals that will deliver improvements of 100% or more in core areas of their business from customer acquisition, to process speeds and revenue growth.

That’s why firms such as Facebook could become the world’s biggest consumer bank and Alphabet (Google) is equally happy with the idea of building cars, doing life extension research or running airports as it is conducting internet searches.

For these new ‘masters of the universe’ it’s all about having mastery of the data and building a deep understanding of, and relationship with, the end customer.

The clash between the physical and digital worlds – and how the former learn to embed digital in their DNA – will shape the competitive landscape over the next decade, and drive the transformation of literally every business sector, including air transport.

EXPONENTIAL THINKING

According to what’s often called ‘Moore’s Law’, computing power doubles roughly every 18-24 months. Innovators are seeking to extend this idea of exponential growth from the digital to the physical domain and are using it to drive dramatic changes in strategies and business models, in sectors as diverse as hotels (Airbnb), car manufacture (Local Motors) and banking (Tangerine).

These new entrants are using exponential thinking to shake up the status quo in established industries – not by changing the rules but by changing the game itself.

Take telecommunications. Who’d have thought, 10 or 15 years ago, we’d have free Internet telephony? Then Skype came along and started giving away the industry’s core product – telephone calls – for free.

This was unheard of. They now handle 40% of all international call traffic – and with just 1,600 staff. Most telecoms organizations have more than that in their customer service centers!

The financial returns for those adopting exponential thinking can be staggering. For example, Uber is a capacity recycler with no assets of its own. It takes unused cars and unused people and recycles them into a taxi service. It doesn’t own a single asset. And yet its valuation went up 20-fold over three years to reach US\$40bn in 2014.

AIR TRANSPORT

The air transport industry has traditionally been shielded somewhat from Moore’s Law because regulation has meant we don’t have the same level of competition as other sectors. There’s relatively little choice for passengers. Will an airline lose business because it lacks a certain app? Probably not. But in other sectors, there is more choice, and thus a higher pace of innovation.

However, relatively straightforward legislative change could see the emergence of an Uber for domestic air passengers with the capacity being provided by private planes and smaller airports. Similarly, superfast next generation surface transport services such as Hyperloop could dramatically reduce the time, cost and environmental impact of getting from A to B.

Perhaps the biggest threat comes from a small number of players like Apple, Samsung, Google and Facebook who act as the interface between customers and the world. All of these firms are looking to insert themselves in the transaction flows and capture a bigger and bigger share of the revenues away from the underlying service providers such as airlines.

The challenge with our industry, then, is how should we respond to the quickening pace of innovation? Is it sensible to base our strategies on the hope that regulators will protect us, customers will stay loyal and that no disruptive new entrants will emerge? What happens if we do nothing?

OPEN TO CHANGE

Clearly, we have to plan for, respond to and embrace innovative technologies. Failure to embrace digital thinking and the need for constant reinvention could leave the way open for disruptive thinkers with innovative business models to enter the marketplace, change the game, and leave us on the sidelines.

For those open to change, the technology on its way holds solutions for real-world challenges faced in the air transport industry. Decision-making is one of them.





When there's an unusual incident – a plane is late or there's a weather delay – the knowledge on how to respond is largely held in the heads of key people.

Rapid advances in artificial intelligence (AI), and machine learning in particular, mean that we could soon have systems which can learn how we addressed similar situations in the past and advise almost instantaneously on the best course of action for a new incident.

Underlying this rise in AI-supported decision-making is the growth of big data. Increasingly, I believe we'll see two types of organizations in the world: those who know how to manage and master their data and those who drown in it.

The rise of the Internet of Things (IoT) means we'll see far more objects which have the capacity to generate data and the intelligence to use it. As a result, we'll see the emergence of a range of smart objects and 4D printed materials that can change their shape and performance over time. Just imagine the implications of this for air transportation.

'NATURAL' EVOLUTION

There's a 'natural' evolution in the size and performance of computers underlying all this digital disruption, and it's increasingly going in one direction: mobile. We've gone from the mainframe to desktop computers, to 'luggable' devices and 'portable' computers to smartphones.

We're already in the next phase of evolution as computing devices become more wearable – witness the popularity of smart watches and personal health monitoring devices.

It's not such a big leap to go from wearables to embedded devices. Millions of people already have implanted pace

makers, hearing aids, and sight enhancers. Next we'll see devices such as GPS trackers and memory for our mobile phones embedded in our bodies.

If airport security systems have issues processing people with wearables, how are they going to handle someone who has five or six devices embedded in their body? A whole new era will be upon us shortly, and I have yet to see a single airport that has a plan for it.

SHAKEUP?

Technology and the internet in particular create the potential for 'near infinite' consumer choice. What could that mean in the context of transport?

Right now we have the technological capability to extend the range of options and break with the narrow confines of three or four classes of travel. People are already starting to experiment with unbundling the standard product offering and giving the passenger greater choice over the design of their experience.

This ranges from where they sit in the plane, the food they eat and how it is served, to entertainment options, air mile rewards, use of lounges, ground transport, and auxiliary options. Ever more sophisticated technology capabilities will allow for an increasingly personalized and customized proposition.

It's becoming clear that our ability to differentiate and add value will depend on our ability to master the intangible information component of physical goods and services such as air travel. This means we can also expect to see far greater competition from technology centric players with deep expertise in using data, and a more intimate relationship with the customer.



“FOR PLAYERS IN THE AIR TRANSPORT SECTOR, IT IS A MATTER OF PERSONAL CHOICE WHETHER WE WILL BE MASSIVE VICTIMS OR MAJOR BENEFICIARIES OF THE CHANGES COMING OUR WAY.”

The likes of Apple, Google and Facebook are only just beginning to appreciate and exploit the true value of being the interface between people and the planet, and the data being generated through the resulting interactions.

For example, on a daily basis over a billion Facebook users now share details of their lives, views and preferences with the rest of the world. Facebook in turn is beginning to understand the true value of the consumer insights contained in those interactions.

I believe that the pace of scientific and technological advancement means we will see more change in the next five years than in the last

five hundred. In many key ways, society, government and business will look very different in 2020.

For players in the air transport sector, it is a matter of personal choice whether we will be massive victims or major beneficiaries of the changes coming our way.

Digital transformation will be at the forefront of this next wave of innovation. Hence a good place to start is to stop thinking of ourselves as physical entities that have to use technology, and start re-imagining and reinventing our organizations as digital entities that happen to do physical things. ■

THE FUTURE OF BUSINESS
'Critical insight into a rapidly changing world from 60 future thinkers', edited by Rohit Talwar. Available at:
www.fastfuturepublishing.com



LET'S PUSH THE TECH ENVELOPE

THE SITA LAB'S GROUNDBREAKING WORK CONTINUES TO GRAB INDUSTRY HEADLINES. THE TEAM HAS ALREADY NOTCHED UP THE WORLD'S FIRST TRIAL OF NFC BOARDING PASSES AND FIRST USE OF GOOGLE GLASS TECHNOLOGY FOR SERVING PASSENGERS, AMONG ITS MANY ACCOLADES AND AWARDS.

2015 SITA LAB INNOVATION DAY

In November the SITA Lab is holding its 2015 Innovation Day in Geneva, Switzerland. For the first time, the event is being opened up to the wider air transport community with SITA Board Directors and SITA Council representatives invited to participate.



“AIRLINES ARE FACED WITH A COMMON PROBLEM WHEN THEY DEVELOP MOBILE SERVICES AND THAT IS THE SERVICE HAS TO WORK ON A WIDE RANGE OF PHONE MODELS RUNNING DIFFERENT OPERATING SOFTWARE.”

**RENAUD IRMINGER
HEAD OF SITA LAB**

↳ So what are the latest innovations getting the SITA Lab team excited? We went to find out.

MOBILE EXCELLENCE

The logical place to start is with mobile. Humans have adopted no other technology faster and it’s now permeating every aspect of air travel both for passengers and staff.

Travel apps are everywhere and ones that can differentiate the passenger experience through ease of use and functionality are the apps that will get adopted.

The Lab’s been researching apps and the IT architecture around them for several years, developing over 50 mobile apps and in doing so becoming a leader in the mobile travel space.

APIS

The Lab is a strong advocate of Application Programming Interfaces, or APIs, as they’re known to developers, as a way to stimulate mobile innovation. APIs act as building blocks for creating apps and when done well, make software development faster and easier.

One result has been the creation of an API portal, called **www.developer.aero**, that’s become the go-to platform for developers wanting access to industry data. It handles millions of API calls a day.

By building APIs that access industry data the Lab’s been able to spearhead a wave of travel app innovation.



BOARDING

A good example is a common use API that enables airlines to create and distribute mobile boarding passes to their passengers without having to worry about Software Development Kit (SDK) changes to iOS, Android and Windows.

The strength of this approach was highlighted when Apple launched boarding pass in Passbook on its iPhone. The Lab made the necessary one-time coding changes, enabling all airlines using the API to benefit from Apple Passbook with no effort needed on their side.

To date the API is used to digitally board more than 35 million passengers a year, saving airlines money and eliminating check-in queues for passengers.

COMMUNITY APPROACH

Garry Kelly, Senior Lead Solution Architect, SITA Lab, believes this type of community approach to mobile boarding passes makes life a lot easier for airlines than going it alone. He reckons it should help push along the industry goal of paperless travel.

“Airlines are faced with a common problem when they develop mobile services, because the service must work on a wide range of phone models running different operating software.

“By developing a common-use API, airlines are able to focus their development efforts on the front-end experience for their passengers, while we at SITA take care of the back-end

complexity resulting from all the changes and upgrades made by phone manufacturers,” he says.

It’s an approach that appeals to airlines. JetBlue and Virgin Atlantic are two of the airlines using the service, which is fully compliant with regulations, including in the US where the TSA requires encrypted mobile boarding passes.

DAY OF TRAVEL

A succession of other SITA Lab-developed APIs is now available to the wider development community on its developer.aero platform, including seven that underpin an evolving suite of mobile information services for passengers on their day of travel. Such services use predictive and contextual technologies.

They can be integrated into airport or airline apps to give passengers who download it onto their smartphone a personalized set of services relating to their trip, depending on where they're currently located. See 'New era of intelligence' and 'Empower your passengers', pages 16 and 14.

CONTEXT AND PROXIMITY

Getting the rich functionality of web pages into the much smaller mobile form factor is the ongoing challenge. In fact, lack of usability is cited by passengers as a key reason for slow adoption of mobile services.

Stepping up to the plate, the Lab is driving improvements in travel app usability, as well as developing a more personalized experience for users via the use of context and proximity services.

Excited by collaborative work that is now well underway, Renaud Irminger, Head of SITA Lab, makes a point of highlighting "usability and ease of use as a driving force in design."

"The focus today is on context to give a highly personalized experience to the passenger, as well as an improved look and feel with clearer text and higher resolution graphics," he says.

COMMUNITY RESOURCE

This type of joint innovation reflects the ethos of the Lab to build relationships and work with the industry, developing co-innovation projects as a community resource.

"Part of the success of SITA Lab is the direct result of working closely with our customers and members. By partnering, we're able to take ideas out of the lab environment and test them in live situations to get real world data and insight," says Irminger.

He cites wearable technology as an example. "This can work well in a controlled environment, but with Google Glass, for instance, we need to find out whether battery life and connectivity issues from continuous use in a busy airport would take its toll and reduce performance. For this, working with Virgin Atlantic at Heathrow Airport was a perfect testing ground."

PARTNERSHIPS

Two longer term partnerships formed by the Lab are with Orange Business Services and Changi Airport Group.

The first one with Orange spearheaded a number of projects, including an extensive program on indoor geolocation technology in which the Lab designed the world's first indoor Wi-Fi-based tracking system in a large public space of an airport in Northern Europe in 2011.

NFC

Another headline project has been investigating use cases for Near Field Communications (NFC), a close range wireless data transfer technology incorporated in most smartphones, and often touted as the future of mobile payments and public transport ticketing.

The Lab and Orange conducted several NFC projects, the latest being in 2014, working with Air France and Toulouse Airport.

It focused on developing a proof of concept showing that a passenger with an NFC-enabled phone and mobile boarding pass could travel through the different touch points of the airport and board the aircraft with just a 'touch and go'.

"NFC has proved popular with the passengers and airline executives that have tested it, so we think it has a bright future within our

DRONE RESEARCH FOR AIR TRANSPORT

SITA Lab is currently investigating aircraft visual inspection using drones with a few airlines. The main elements being researched are the:

- Quality of the images and videos taken from a drone.
- Ability to fly autonomously.
- Features of a platform to process, analyze and report back on potential.

"WE'RE STILL FINALIZING THE DETAILS, BUT IT'S GOING TO BE AN EFFECTIVE WAY FOR US TO CAPTURE NEW TECHNOLOGY AND EXPERTISE MORE QUICKLY AND IMPROVE OUR PACE OF INVENTION."

industry and we expect to see widespread deployment of the technology by the end of 2016," says Irminger.

"As a result of our work we've published a technical standard for NFC use within air transport, which we are discussing with numerous industry stakeholders."

QUEUE BUSTING

The Lab is also working on joint innovation projects with Changi Airport Group. They've recently completed trialing tablets for common-use check-in, which could allow staff to rove around the terminal and check-in passengers and cut queues.

The results are still being assessed, but the early indications are that tablet technology can be a useful tool for queue busting in airports where space constraints restrict the ability to open up new check-in desks at peak times.

SPREADING THE WORD

There's no limit to the number of good ideas out there that could benefit air transport, so it's no surprise that the Lab is eager to tap into the ecosystem of tech startup companies.

Jim Peters, SITA CTO, says the Lab is working on extending the reach of SITA's innovation via participation in hackathons and innovation sessions, as well as looking to allocate more resources to conduct incubation of startups and x-prizes.

As Peters concludes: "Good ideas get better when shared. Through our work we want the whole community to benefit from the experience. This can only serve to push the tech envelope more, and to build a better industry." ■

FULL ARTICLE ONLINE

www.sita.aero/air-transport-it-review



SOFTWARE APPLICATIONS RUN AND RULE OUR INDUSTRY, SO GETTING THEM INTEGRATED EASILY, DEPLOYED INSTANTLY AND ADOPTED FAST, CAN BE A COMPETITIVE ADVANTAGE.

NEW WAYS TO DELIVER

It's no surprise that cloud computing, which brings all of these benefits, is transforming the industry's approach to IT.

Today, cloud is acting as the key enabler to exploit a host of technology trends from mobile to the Internet of Things to big data, while representing a significant opportunity to improve the bottom line.

MOBILE HEADACHES

One of the great things about cloud is that it can deliver data and applications whenever and wherever you want.

Increasingly, that access comes from a mobile device. Today, internet usage through mobile devices exceeds usage through desktop PCs.

This continued drive towards a mobile world does cause some headaches in software delivery, and it raises the question of how easily air transport can shift its business models towards mobile.

According to SITA's 2015 Airline IT Trends Survey, around four out of five airlines are investing in the mobile space for either passengers or employees, but much of this is still at the R&D level rather than wide scale deployments.

With 83% of passengers already traveling with a smartphone, the bottom line is that today many airlines and airports are not prepared for the pace of change that mobile is bringing.

MORE DATA

The issue is taking on more significance as the Internet revolution expands beyond people to include objects.

Airports and aircraft will be filled with sensor equipped devices that provide real-time data points used for improving operations and the passenger experience.

This natural partnership of mobile and the Internet of Things (IoT) will drive an


exponential growth in data collection. It will need to be processed and analyzed to glean insights, and these insights used to drive decisions and automated actions.

The challenge for airlines and airports is how to successfully exploit these technology trends, given the constraints of their own IT infrastructure and the added complexity of integrating from a variety of complex interfaces and data silos in the backend.

CLOUD POWER

Building an IT platform that could harness the potential of a mobile and data driven industry was the driving force behind SITA's own adoption of cloud technologies in 2011.

"At the time, the concept was not so well understood in the business world," says Benoit Verbaere, SITA's Portfolio Director of Cloud Services.



“IF YOU LOOK AT DESKTOP, MOBILE, BIG DATA, AND FURTHER OUT, THE INTERNET OF THINGS, THE SINGLE UNIFYING TECHNOLOGY THAT CAN INTEGRATE ALL OF THIS INTO COHERENT, SEAMLESS SERVICES FOR END-USERS IS A CLOUD PLATFORM.”

BENOIT VERBAERE
PORTFOLIO DIRECTOR, CLOUD SERVICES, SITA

However, he believes that over the last four years there has been a shift in attitude and that the benefits of cloud are now well established.

“With so many connected devices, the Internet has changed the way we consume and generate data. The cloud is the common denominator for every digital service we want to access.”

UNIFYING

“If you look at desktop, mobile, big data, and further out, the Internet of Things, the single unifying technology that can integrate all of this into coherent, seamless services for end-users is a cloud platform.”

“It’s the fast adoption of smartphones and other mobile devices that has been a

catalyst, and now passengers and employees expect adopting apps should be just as fast and simple as the experience you get with the AppStore®,” Verbaere explains.

“Most mobile apps need the support of web-based services to make them useful and powerful. The glue that holds it all together is generally much more simple to activate in the cloud, so people have become very comfortable with using cloud-based applications and services.”

“That confidence has spread into the business environment through employees. Now we see businesses wanting to capitalize on easier integration and management by moving software delivery to the cloud so that their employees and

customers can start fast, build more process value from integrated applications, and achieve performance.”

SECURITY, RESILIENCE

SITA has seen healthy adoption of its own community cloud platform, the ATI Cloud. Through its software-as-a-service (SaaS) model, the ATI Cloud serves more than 100 air transport customers, delivering applications to end-users worldwide, whether they are an employee using a handheld device on the airport apron or a passenger using a check-in kiosk at an outlying airport.

As well as providing the agility and flexibility for airlines and airports, the ATI Cloud also

ticks the boxes for reliability, security, and consistency of service.

Verbaere believes that because the ATI Cloud has been designed to meet industry standard security and reliability, customers have gained confidence to move their business critical applications over quicker than with public clouds.

“Today, the ATI Cloud hosts over 20 mission critical applications, including AIRCOM Server and BagManager, as well as the recently added AirportConnect Open and AirportConnect Kiosk that enable airports to move their common-use services offsite and into the cloud,” he says. ■

FOR MORE

www.sita.aero/ati-cloud
www.developer.aero



FULL ARTICLE ONLINE

www.sita.aero/air-transport-it-review



EMPOWER YOUR PASSENGERS



APPLICATION PROGRAMMING INTERFACES (APIS) AND MOBILE APPLICATIONS EMPOWER PASSENGERS ON THEIR DAY OF TRAVEL AND KEEP ALL STAKEHOLDERS ON THE SAME PAGE, OR SCREEN, SAYS **JIM PETERS**, CTO, SITA.

We all know the connected traveler wants information, which sounds simple enough. But when you take into account the different types of information, from all the different sources and different owners, it gets very complicated very quickly.

For travelers, though, it's easy. They want information that relates directly to their journey.

This need for information has led to the creation of thousands of travel apps. In fact, if you search 'travel' on iTunes App Store, you'll find 17,000 apps with the word 'travel' in them. Obviously, this isn't sustainable.

AN EXPERIENCE

What if, instead of having an app, you downloaded an experience? An experience that includes your flight, your hotel, your restaurants, your tourist spots, your business locales – everything needed to create your travel experience. What would that look like?

That may indeed be where we're headed with APIs. There are incremental steps being taken that can help the air transport industry overcome some of its more pressing challenges around data and the use of all these apps.

DEEP-LINKING

One step is called 'deep-linking,' which means exactly what it says: linking from one app to another, or to the Web. Apps are typically seen as walled gardens; you can't go outside them. But the concept of deep-linking is changing that, and it's creating a new level of collaboration in data sharing.

One worry that may prevent widespread adoption by airlines is "If I link to another provider's app or website, will the user come back to me?"

The answer is: Yes. They will come back, and they'll stay on your app as long as the content is useful to them. So airlines may have to give up a little bit of branding in

order to adopt a new level of collaboration, but this will allow passengers to move from app to app to get all the necessary information they need when they need it.

DATA ISSUES

The industry has pressing challenges around data and how it's being used. If you're curious, go into the iTunes Store and look at the reviews for those thousands of travel apps. It's easy to locate the challenges: just look at the one-star reviews - there are plenty of them.

Examples include: "It gave me the wrong data. I can't use it." "Waste of time. Not up to date."

All of these go back to data issues – especially around flight information. There's a good reason for this. The data has three main stakeholders: air traffic control, the airline, and the airport. It's a big challenge to get them all on the same page – or, the same screen.

Air traffic control notifies the airport and airline of a flight delay, but the app is updated only by the airline. Do the right staff have access to update the app on the go, so the passenger receives it when it's needed and not when it's too late?

AGGREGATORS

A key opportunity is to have a neutral service provider, like SITA, help to aggregate and broker the data. There are two pieces in creating such a data brokerage service: standards and APIs.

You have to create standards for how the data will be shared and disseminated. SITA is working with IATA and ACI on this.

There's still work to be done, but we've made a start. The best news is that IATA and ACI are collaborating. It's a great step that the main governing bodies for airlines and airports are going to each other's meetings.

COMMUNITY PLATFORM

APIs are what allow airlines and airports to push information to users – both passengers and personnel. Not only can they push information out, but thanks to location or proximity-based technologies like beacons, they allow information to come back to the cloud where the data is stored and sifted.

This allows for real-time analytics and business intelligence – keeping everyone on the same page or screen – air traffic control, airlines, airports, and the passenger.

SITA's community API platform, developer.aero, supports the app ecosystem. It includes both customer-facing and workforce APIs.

There's a lot of data that could move back and forth between them.

We can't invent the data, and we can't invent the specs, but we can provide the platform for all interested parties to come together and address the data problems that are out there.

API ACTION

It's a role suited to SITA as an industry-owned organization with an exclusive air transport focus.

We can provide scale too: most travel apps are issued by airlines who are our core customers. And, we can leverage developer.aero and the SITA ATI Cloud infrastructure, processes and know-how to truly empower passengers through APIs. ■

FOR MORE

www.developer.aero



DEVELOPER.AERO

Launched in 2012 by SITA, developer.aero is a development resource for the air transport developer community and other interested parties. It provides a range of powerful APIs to stimulate technological innovation in the air transport industry.

Developer.aero offers all the data and tools to build complete passenger and aircraft solutions across the travel journey – planning and booking, airport operations and security, baggage, aircraft connectivity, and inflight cabin and cockpit operations.

Here are some of the APIs available:

- **Beacon Registry** – a registry of common use iBeacons for the air transport industry.
- **BagJourney** – a simple interface into the complex world of baggage management allowing real-time status of a specific bag. See also: 'Resolution-ready,' page 30.
- **Flight Information** – flight statistics and information.
- **Boarding Pass** – managed service by SITA allowing airlines complete flexibility in the creation, customization and distribution of mobile and NFC boarding passes.
- **iTravel** – simple and cost-effective alternative to conventional development of airline customer applications using SITA's Reservation Web Services.
- **Airport** – a free API that retrieves information about airports, allowing developers to test and familiarize themselves with SITA's API management systems.

“WE CAN'T INVENT THE DATA, AND WE CAN'T INVENT THE SPECS, BUT WE CAN PROVIDE THE PLATFORM FOR ALL INTERESTED PARTIES TO COME TOGETHER AND ADDRESS THE DATA PROBLEMS THAT ARE OUT THERE.”

A NEW ERA OF INTELLIGENCE

SMARTER AIRPORTS NEED INFORMATION AND THE TOOLS TO MAKE SENSE OF IT – FAST. A NEW ERA OF REAL-TIME BUSINESS INTELLIGENCE AND ANALYTICS IS BECKONING. IT DEMANDS A NEW APPROACH TO HARNESS AND EXPLOIT THE MASSIVE AMOUNTS OF DATA AT OUR FINGERTIPS.



DAY OF OPERATIONS LETS AIRPORTS AGGREGATE, ANALYZE AND ACCESS REAL-TIME INFORMATION ON THE GO.

EASYJET WINS PASSENGER ASSISTANCE ACCOLADE

easyJet was a winner at the Future Travel Experience Awards in 2015 for 'Best Passenger Assistance Initiative' based on the launch of its 'Mobile Host'.

The airline's Mobile Host helps to simplify the departures experience for passengers by providing automatic reminders and directions via the easyJet app for iPhone.

The app guides passengers, step by step, on their day of travel with airport directions, queue times, walk times and other flight reminders and updates.

The solution combines live data from the airport's information systems with the passenger's booking details, location and flight time to deliver bespoke information while the passenger is in the terminal.

Among the key features are check-in reminders, directions to bag drop and departure gates thanks to integration with Google Indoor Maps, and real-time baggage belt push notifications.

PERSONALIZED

Today, with the ability to call on up-to-the-minute information, the airline's new app provides a personalized experience for each traveler.

In the words of easyJet's Head of Digital James Millett it's "another important step in using digital technology to improve our customers' experience and to make it as easy to travel with easyJet as it is affordable."

On the day of travel, for example, relevant flight information will seamlessly appear on the homepage and destination imagery shown for searched and booked flights.

It also includes countdown to travel and passenger details such as payment specifics and passport information, which can be easily retrieved. Bags, sports equipment, seats, hotels and car hire can be quickly added to an existing booking thereby enhancing the whole travel experience for passengers.

For more information go to:
<http://mediacentre.easyjet.com>

"Knowledge is power," said the philosopher Francis Bacon. That's as true today as it was 400 years ago. For airports, knowledge requires the ability to access and leverage ever-growing mountains of data.

As the Internet of Things dawns – and we face an era brimming with so-called 'data lakes' and the power of proximity technologies that capture data from a myriad of devices around the airport – the task of freeing up and using data becomes critical.

But to transform data into actionable information requires the ability to interpret and understand it. Without this crucial step, all the data in the world is useless, especially when it comes to improving the passenger experience and airport operations.

BI AGENDAS

That's why real-time business intelligence (BI) tops airport agendas worldwide. According to SITA's Airport IT Trends Survey, nine out of 10 airports plan to make BI investments through 2017.

NEW SERVICES JUST TRIALED AT A MAJOR AIRPORT HELP PASSENGERS ON THEIR DAY OF TRAVEL BY PROVIDING INFORMATION THEY NEED – WHEN AND WHERE THEY NEED IT.

To help improve operations and the passenger experience, airports want to use BI tools to monitor passenger flow, and deploy staff and assets more effectively, including the ability to exploit aircraft movement data.

On top of that, they want BI to support their efforts to increase non-aeronautical revenues. Passenger flow intelligence sits high on the revenue-generation agenda too. An often-cited statistic is that an extra 10 minutes in security reduces an average passenger's retail spend by 30%. That's significant when multiplied by thousands of passengers each day.

With proximity sensing devices such as sensors and beacons, and other geo-location technologies, SITA is providing the foundation for personalized experiences that can be tailored based on the user's physical location.

DIGITAL INTERACTION

This digital interaction at the airport is regarded as a must-have for the future, according to Arthur D Little's 2015 report on 'Airports 4.0: Impact of Digital Transformation on Airport Economics'.

It reckons that airport expenditure on 'smartization' (digital-based solutions) should grow by around 40% in 2020 over today, with the objectives of better customer experience and improved operations.

The report says that faster processes are key for customer spending increases at airports, resulting in more dwell time. It quantifies that potential spend as 2-3 Euros per passenger for every additional hour.

It also cites a 5.1% increase in non-aeronautical spend as a result of an airport's digital

transformation, the main areas of increase being in retail, food and beverage.

SMART ANSWERS

SITA research points to the need for actionable intelligence in three areas: sales and marketing, operational awareness, and passenger experience.

"Getting smart answers to questions across each of these areas is essential to driving the business and operations," says Ron Reed, Director of Business Intelligence at SITA.

"Answers to many questions have always been available," he says, "but not in real-time and not with powerful enough tools to interpret data, converting it to intelligence that can be acted upon."



WITH PROXIMITY DEVICES SUCH AS BEACONS AND OTHER GEO-LOCATION TECHNOLOGIES, SITA IS PROVIDING PERSONALIZED EXPERIENCES THAT CAN BE TAILORED BASED ON THE USER'S PHYSICAL LOCATION.

One of the key challenges to arriving at smart answers is addressing the sheer volume of data out there, which itself is growing. That's why, according to Reed, "any approach to BI at the airport must embrace the multiple data sources available. "As an industry, we must access, integrate and correlate multiple data sources. It's even more important with the pending arrival of the Internet of Things and emerging proximity technologies like beacons – which will bring even more data."

WHAT'S NEEDED

In a nutshell, what's needed is quick and simple access to data from multiple sources, consolidated and correlated in a way that's understandable and actionable.

Then, Reed says, "once you have the data, you need meaningful and simple analytics tools to get smart answers to fundamental questions promptly and when possible in real-time."

SITA is responding to these needs with a fresh approach and an evolving portfolio of tools and services. These include advanced capabilities for self-service access to analytics, ad-hoc queries, and executive-level dashboards.

OPERATIONS

To make a real difference to the passenger experience, airports need a better understanding of passenger behavior.

SITA's BI solutions consolidate data from multiple sources, simplifying access for the end-user to different categories of BI – including passenger flow and dwell,

operations, capacity forecasting, asset monitoring, parking, retail, and more.

"We're already pioneering in this field," Reed says. With a constantly evolving BI portfolio based on a common infrastructure that embraces technologies such as Wi-Fi, Bluetooth, beacons, cloud and more – SITA is delivering a location-based real-time environment."

Most importantly, SITA's services embrace proximity – this is the fresh approach that's missing in today's world of APIs and apps.

DAY OF TRAVEL

SITA's Digital solutions for airports include its APIs to help passengers on their day of travel, by providing information they need – when and where they need it. See 'Empower your passengers,' page 14.

Today's apps present the same experience whether the user is at home or at the airport. SITA's strategy is to integrate location-based technology to personalize the experience for its customers.

With proximity and other geo-location technology, SITA will provide personalized experiences that can now be tailored to where you are physically located.

According to Reed: "Technology has evolved to give passengers an individualized and unique experience on the day of travel. Our mobile app is an intelligent tool that will anticipate your needs.

The way passengers interact with mobile devices in their everyday lives will be their expectations for airport apps.

"We're bringing Google Now-like features into the air travel space. It's the new way forward. These features and others will give passengers reason to download and become active users of airport mobile applications.

"We're also thinking ahead and working with airports on how to best monetize their apps through advertising and integrating service provisioning, such as parking and shopping, as part of the mobile experience.



REVENUE DRIVER

By providing tools to manage in-app promotions, concession vouchers, coupons, and so on, BI creates new revenue opportunities for airports. One future possibility is the ability to lease virtual billboards in-app to current media partners.

Another future possibility includes integration of Customs and Border forms contextually and reminding users to complete them before departing. There's also potential to streamline different processes for the passenger (for example, reserving a premium parking space) and to integrate loyalty programs to encourage repeat usage.

Other future possibilities include:

- Accommodation of wearables such as Apple Watch.
- Allowing departing and connecting passengers to order food as they traverse the airport and pick up on their way to their departing gates and connecting flights.
- General and valet parking pre-booking engines supporting m-commerce.
- Extending wayfinding and navigation to the parking garage.
- Proximity campaigns to passengers in various areas or zones in the airport, such as 'Chili's 15% off your meal'.

According to Reed: "By adding value, in the form of content that passengers need, at the time and place they need it, we are now creating a platform to consistently engage passengers, offering discounts based on location in airports and other promotional content."



"AS AN INDUSTRY, WE MUST ACCESS, INTEGRATE AND CORRELATE MULTIPLE DATA SOURCES. IT'S EVEN MORE IMPORTANT WITH THE PENDING ARRIVAL OF THE INTERNET OF THINGS AND EMERGING PROXIMITY TECHNOLOGIES LIKE BEACONS – WHICH WILL BRING EVEN MORE DATA."

RON REED
DIRECTOR OF BUSINESS INTELLIGENCE, SITA

PULLING IT TOGETHER

Not only is SITA developing mobile solutions powered by APIs to improve the day of travel experience for passengers, but it also will soon be making these APIs accessible to the entire travel developer community.

There's no shortage of developers interested in travel APIs, but the problem is that needed data is fragmented, inaccurate, or non-existent.

The industry needs one party to provide the single source of truth – meaning the most accurate, real-time information for passengers' mobile apps, whether they're using an airline, airport or online travel aggregator's app, such as Expedia and Orbitz.

SITA is ready to partner with airports to help commercialize their data and provide airlines and app developers a one-stop data store for global access to APIs. See 'Empower your passengers', page 14.

DATA SERVICES

This is the genesis behind services to simplify and commercialize airport data by connecting different sources into a single global source.

This will provide a set of airport APIs that aggregate the most complete and accurate airport information in the world.



Instead of having to access data from each airport individually (there are roughly 2,900 commercial airports in the world), developers can subscribe to www.developer.aero to get everything they need in one place.

The upsides are considerable – for everyone. Airports get operational improvements and increased non-aeronautical revenues, while airlines get an improved and consistent passenger experience.

Developers get a manageable way to tap into the available data in order to create powerful apps at a reduced

cost. Passengers get the information they need and want, when and where they need it.

"SITA simplifies how others gain access to the airport's data," Reed concludes.

"The airport only has to work with us, instead of every individual developer or airline in search of this data. And yet the airport still receives commercial benefits from each data consumer." ■

FOR MORE
www.sita.aero/bi



BEACONS ARE A GATEWAY TO THE INTERNET OF THINGS. LITTLE WONDER THAT MANY AIRPORTS AND AIRLINES ARE RAMPING UP TO EXPLORE THE PROMISE OF BEACONS.

BEACON PROMISE

Why is it that small, low powered transmitters of Bluetooth signals are causing such a stir in the air transport industry? "Because of their promise to get important data straight into the hands of passengers and staff right across the journey," says Kevin O'Sullivan, SITA Lab's Principal Solution Architect.

"As a breakthrough in geo-location and proximity technologies, beacons are location-aware. So when a mobile device with Bluetooth enabled moves into range they can trigger web services on the app that are relevant to that location," he explains.

"Essentially this means airlines or airports can contextualize the information they send to the passenger, making it more relevant and useful."

PRIORITY

That's why location technologies are a high priority among airports, who place passenger processing at the top of their investment agendas, according to SITA's Airport IT Trends Survey.

In fact, beacons are an important tool in the location technology kitbag – which today includes Wi-Fi triangulation, Indoor GPS and now Bluetooth – presenting huge opportunities to communicate via passengers' smartphones.

They've been described as the 'gateway to the Internet of Things', where everything that can be connected will be connected, for the purposes of communicating, tracking, monitoring, measuring and more.

'WHO'S WHO'

The promise of beacons explains why beacon trials and proof of concepts are taking place among a Who's Who of the world's leading airports and airlines.

Among them – in addition to leaders in the field Miami International Airport (see 'The way forward') – are American Airlines-Dallas/Fort Worth International Airport, United Airlines and Hong Kong International Airport.

All in all, at least 20 other trials are underway among those eager to exploit beacon technology to trigger displays of location-relevant information on devices at the right time and in the right situation.

PIONEERS

American Airlines achieved a first well over a year ago with the industry's largest deployment of beacons at that time, with a six-month pilot at **Dallas/Fort Worth International Airport**, as a precursor to a permanent implementation.

The airline worked with SITA to use beacon location detection to enhance its mobile app and give passengers accurate way-finding information. As part of the trial, American Airlines was the first airline to use the SITA Common-Use Beacon Registry.

WHERE ARE YOU?

Others leading the charge include **Singapore Airlines**, who are using beacons in relation to passenger location. In conjunction with Singapore Airlines and mobile app vendor MTT, the SITA Lab deployed 30 beacons around the airline's lounge in Terminal 3 of Changi Airport.



A mobile app was designed to show the location of passengers within the lounge enabling staff to quickly locate them should they be late for a flight.

"THE BIG PROMISE OF BEACONS IS THAT THEY'LL GREATLY IMPROVE THE PASSENGER EXPERIENCE AND FACILITATION. BUT ON TOP OF THAT WE'LL SEE GREATER EFFICIENCIES AT THE AIRPORT."

KEVIN O'SULLIVAN
SITA LAB'S PRINCIPAL SOLUTION ARCHITECT

AIRPORTS

For airports, there's a promising range of uses. The SITA Lab worked with **Miami International Airport** to deploy over 230 beacons covering entrances, check-in, gates, baggage claim and valet parking zones throughout the airport in just two days.

The beacons are available to airlines, retailers and other partners via SITA's Common-Use Beacon Registry. They allow useful content to be triggered on a passenger's or staff's mobile device as they pass through the airport.

WAY-FINDING

Way-finding is a recurring use. A proof of concept was conducted with an Asian airport to evaluate the use of interactive maps for way-finding and searching for retail and airport facilities.

Other beacon use cases tested were for triggering relevant notification messages at airport checkpoints, as well as evaluating data feeds into the airport's app to provide different information to the passenger depending on their location.



This included departure/arrival flight list, flight status, gate info, and baggage belt for arriving passengers.

INTERACTIVE MAPS

In the case of **Hong Kong International Airport**, the 50 or so beacons deployed in its Terminal 1 are also to help with way-finding, using best-in-class interactive maps on passengers' mobile phones and tablets.

BEACON REGISTRY

With the potential for the proliferation of beacons, it's important to avoid wasteful duplication. As part of its role of providing value to the air transport community, SITA's Common-Use Beacon Registry offers shared infrastructure to airlines, retailers and other service-providers across the world for beacon-based services.

As well as avoiding duplication and reducing the cost of installing beacons, the IT is simpler and eliminates the need for everyone to manage their own beacons. ■

GOOGLE'S EDDYSTONE



Until recently, beacons have been solely an Apple phenomenon. With the introduction the Eddystone standard, Google joins Apple as a major player in the market, confirming the importance of beacons in the location technologies tool kit.

Eddystone offers an open format, cross-platform beacon solution for both Android and iOS. Eddystone and Apple's iBeacons are both technologies that will co-exist, and they are joined by Samsung's Placedge.

"The launch of Google's Eddystone confirms to everybody that beacons are here to stay," says **SITA Lab's Principal Solution Architect Kevin O'Sullivan**. "When you have Apple, Google and Samsung all trying to use beacons to solve the indoor proximity problem you know that the technology has got a future.

"Eddystone is not an 'iBeacon killer' though," he says. "I think the two technologies are here to stay."

OPINION



THE WAY FORWARD

By Maurice Jenkins, Director of Information Systems and Telecommunications, Miami International Airport

To transform the experience for Miami International Airport's passengers the airport is investing in sophisticated IT. Beacon technology is one of the latest initiatives to revolutionize the passenger experience and operations at the airport. Miami's Director of Information Systems and Telecommunications, Maurice Jenkins, tells us more.

"As one of the world's busiest international passenger and freight airports, we focus strongly on the use of leading technologies to enhance the experience for passengers and to make Miami International Airport a more effective operation."

For the full article online, go to www.sita.aero/air-transport-it-review

FOR MORE

'A Shot in the Arm for Beacon Technology,' by **Kevin O'Sullivan, Principal Solution Architect, SITA Lab**, at: www.sita.aero/resources/blog



FULL ARTICLE ONLINE

www.sita.aero/air-transport-it-review



THE EMOTIONAL JOURNEY



IN A FIRST FOR THE INDUSTRY, SITA RESEARCH UNCOVERS STRONG CORRELATIONS BETWEEN IT IN TRAVEL AND THE EMOTIONAL EXPERIENCES OF TRAVELERS AT THE STEPS ALONG THE WAY.

So it's official. Technology across the journey correlates very strongly with travelers' emotions, for better or worse.

Using Plutchik's Wheel of Emotions, SITA and Air Transport World's Passenger IT Trends Survey 2015 looks at the travel experience at each step of the journey.

The ground breaking research considers the impact of technology on traveler moods in terms of positive emotions like happiness and excitement, and negative emotions such as anger and anxiety.

Not only that, it demonstrates unequivocally that passengers are eager to embrace technology right across the various journey steps, for very specific reasons.

The reasons are to:

- Tailor passengers' trips
- Ease their anxieties
- Keep them informed

The research shows that passengers widely associate positive emotions with the early steps in their journey where technology usage is a well established and expected part of their experience.

Web and mobile have certainly proven their value in the check-in and booking stages, as the charts on page 23 show, with 90% and more of passengers experiencing positive emotions.

MORE WANTED

"People are happy about the travel technology we provide already, but they want more," says Head of SITA Lab, Renaud Irminger, citing the latest Airline IT Trends Survey statistics, which corroborate the passenger survey research.

"That happiness in the early stages is reflected in an uptake of 48% for self-service check-in used by travelers, which is set to increase to 71% by 2018."

The implications for continued investment in travel technology are huge – not just in self-service and automation,

but in the ability to harness accurate and timely data at every step of the way.

TAILORED

What's clear from SITA's IT Trends Surveys is the vast potential of data in determining how emotionally connected or engaged travelers feel. The ability to use this data in a personalized way, to tailor trips, is becoming imperative.

Royal Jordanian Airlines' CIO, Ashraf Ayoub, underlines the point: "Personalization is a necessity today as it addresses passenger behavior."

This principle is integral to the industry's investments. Over 80% of airlines are investing in programs to improve personalization and provide flight status updates by 2018.

At the same time, 75% and 68% of them respectively are running major programs in business intelligence and investing in data centers for security and robustness of information over the next three years.

POSITIVE LIGHT

Allison O'Neill, SITA's VP Passenger, believes: "Creating a personalized experience for travelers' smartphones and tablets, or investing more in self-service solutions at the airport, places airlines in an emotionally positive light for their passengers."

"It's really about having a single source of data and the ability to recognize the passenger context and understand how to tailor what the passenger should receive at that moment in time during their journey."

If passengers feel they're viewed in a personalized sense – as opposed to being just a number – it creates a positive emotional experience for them.

"The ability to recognize the passenger at a moment in time, understand what they're looking for, and then

how to queue that service or information for them in an appropriate way, is crucial," says O'Neill.

LESS ANGST

Then there's the survey's second category about IT easing passenger anxiety. "We've all been there," says SITA's Irminger.

"Boarding pass in hand, you're all set, but when you reach the security check-point your stomach sinks as you catch sight of the seemingly endless security line."

SITA's Passenger IT Trends Survey substantiates the view: 36% of passengers have negative emotions at the security stage and 31% at bag collection.

Not surprisingly, the highest number of respondents showed positive emotions when they are able to relax, so dwell time before boarding and onboard the aircraft received strongly positive ratings of 95% and 91% of passengers.

"So how different would it be if airlines notified their travelers of a delay at the security gates, giving them plenty of time to get through and enjoy their dwell time before boarding?" asks Irminger.

Passengers want that kind of control because it instills a feeling of being cared about and can lead to experiencing fewer negative and more positive emotions.

With 72% of passengers saying they would definitely use flight updates and 63% wanting more details around carousel, wait time and bag collection at the destination airport, it's obvious that travelers want more of this information to make better informed decisions.

"THE ABILITY TO RECOGNIZE THE PASSENGER AT A MOMENT IN TIME, UNDERSTAND WHAT THEY'RE LOOKING FOR, AND THEN HOW TO QUEUE THAT SERVICE OR INFORMATION FOR THEM IN AN APPROPRIATE WAY, IS CRUCIAL."

ALLISON O'NEILL
VP PASSENGER, SITA

OPINION



THE RIGHT FOUNDATION

By Allison O'Neill, VP Passenger, SITA

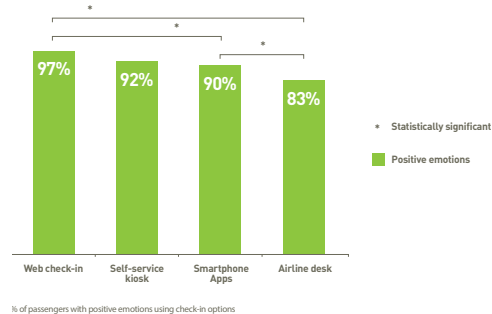
SITA's IT Trends Surveys tell us that travelers increasingly expect an always-on travel experience, with access to information and services whenever and wherever they want.

For airlines the challenge is to attain a single view of the customer across their journey.

It demands a full understanding of what they're looking for and when, with the ability to provide contextual information or services in an appropriate, non-intrusive manner.

For the full article online, go to www.sita.aero/air-transport-it-review

POSITIVE EMOTIONS & CHECK-IN



POSITIVE EMOTIONS & BOOKING





COLLABORATION

But Royal Jordanian’s Ayoub is keen to emphasize that while self-service check-in technology is well established, the continued introduction of technologies at other stages of the journey requires careful management to ensure they don’t add to passenger stress.

“There’s a growing pressure on airlines to enhance the experience of passengers at the airport.

“While airline investments can’t directly improve security and bag collection, we need good management to make sure we can keep travelers informed about these. That will result in potential anxiety points being reduced.”

Ayoub underlines that “this is all about collaboration and communication between all stakeholders contributing to the passenger experience at the airport, including airport authorities, border agencies and the airline.”

INFORMED

That leads to the survey’s third category – passengers’ desire to be kept informed.

“There’s a growing majority of passengers wanting to have services and information,” says Irminger, “which reinforces the hunger for more information. Keeping them up-to-date is one of the best ways to ensure they’re emotionally positive and have a great travel experience.

“Airline staff must be kept informed too, because if they’re equipped with the information, then passengers will also receive it.”

INVESTMENT

SITA’s surveys show that airlines around the world are investing heavily in their mobile strategy, and that employees are firmly in their sights.

Airline staff usage of smartphone and tablets for work tasks is set to double in the next three years to 73% and 38.9% respectively, according to the 2015 Airline IT Trends Survey.

This will enable meaningful interactions between informed front line staff and passengers, which Irminger believes will result in a positive emotional shift.

DATA

But again, success comes down to data quality and business intelligence. It’s critical that any information conveyed, especially personalized information about the passenger’s journey, is accurate, up-to-date and reliable.

“Data is just the means to an end,” explains Irminger. “As things become more connected through beacons at the airport, combined with all the content-rich data in passenger systems, it all needs to be brought together.

“And as we answer passenger demands for more technology across the journey’s steps, we’ll see a better passenger experience driven by more positive emotions.” ■

OPINION



TAILORING THE TRIP


By Ashraf Ayoub, CIO, Royal Jordanian Airlines

For Royal Jordanian Airlines our continued growth in resources and destinations is one objective. But our other key focus is to inspire our passengers and deliver value from the data collected across the whole customer journey.

This data is critical to our ability to tailor the trips of passengers and we regard our focus on personalization as a business imperative and not and just a nice to have. Data collected across the journey enables airlines to create a tailored digital environment for their travelers.

For the full article online, go to www.sita.aero/air-transport-it-review

TRACKING EMOTIONS



In the future, airports could harness the emotion-tracking aspect that beacons could potentially deliver, says Dr Pearl PU Faltings, Head of the Human Computer Interaction Group at Ecole Polytechnique Fédérale de Lausanne.

Faltings cites the possibility of using sensors through the airport to detect emotions automatically – such as mood, motives and attitudes – potentially allowing airlines to effectively measure the passenger’s acceptance of a particular type of technology at a specific time.

For more: [Search the SITAOnline YouTube channel for Dr Pearl PU Faltings.](#)

FOR MORE

Passenger and Airline IT Trends Surveys 2015

www.sita.aero/surveys



“THIS IS ALL ABOUT COLLABORATION AND COMMUNICATION BETWEEN ALL STAKEHOLDERS CONTRIBUTING TO THE PASSENGER EXPERIENCE AT THE AIRPORT, INCLUDING AIRPORT AUTHORITIES, BORDER AGENCIES AND THE AIRLINE.”

ASHRAF AYOUB
ROYAL JORDANIAN AIRLINES’ CIO

WITH TECHNOLOGY BEING MOBILIZED TO ENHANCE THE RELATIONSHIP WITH PASSENGERS, SOME AIRPORTS HAVE BEEN DISCOVERING THAT SMARTPHONES ARE NOT THE ONLY ANSWER TO KEEPING TRAVELERS HAPPY.

THE HUMAN FACTOR

“WE WORK TOWARDS FINDING THAT SWEET SPOT OF EFFICIENT, COST-EFFECTIVE AND INTEGRATED PROCESSES LINKED TO EMOTIONALLY RELAXED PASSENGERS.”

GILLES BRENTINI
INNOVATION MANAGER IT-AIRPORT, GENEVA AIRPORT





Travel can be a turbulent emotional experience – exhilaration, frustration, anticipation, anxiety, anger, apprehension, relief – it’s all there in the faces of passengers as they negotiate the complex stand-alone processes required to get from A to B by plane.

The human factors in technology are being brought increasingly to the foreground as a driver to link processes together, break down silos and barriers between the

various factors in the journey and smooth out the emotional impact for the passenger.

As SITA’s 2015 Passenger and Airline IT Trends Surveys show, every new technology presents new opportunities, as well as challenges – and with 81% of air passengers now traveling with a smartphone, the opportunity has never been greater. However, smartphones are not the only answer. So say our two airport columnists here. ■

“WE HAVE TO BUILD PARTNERSHIPS WITH AIRLINES AND OTHERS WITHIN AND OUTSIDE THE AIRPORT COMMUNITY.”

MICHAEL ZADDACH
SENIOR VICE PRESIDENT IT, MUNICH AIRPORT

THE SWEET SPOT AT GENEVA AIRPORT

By Gilles Brentini, Innovation Manager IT-Airport, Geneva Airport



Innovation is a key ingredient for any customer loyalty recipe. It anticipates needs or delivers a new experience. It’s not necessarily complex, so simple things can easily bring a smile to a nervous passenger.

At Geneva Airport we work to a pyramid of three kinds of innovation: at the base are pragmatic projects aimed at passenger satisfaction, through innovative social ideas, and then to ‘dreams’ at the top of the pyramid, providing another experience or anticipating passenger needs.

Today 97% of our passengers have a smartphone and we have an app for them – scan your boarding pass and it gives all the travel information you need to board.

APPLE WATCH

But we’ve gone further by offering an app on the Apple Watch – launched this year. We had to think carefully about what information to provide, given its size.

We began with parking, which is difficult to find in Geneva Airport – and you can note your exact parking space. Then you have immediately necessary information on the flight, such as how much time you have before boarding.

You get notifications pushed to you, in case of gate or flight changes. And there’s more information available if you need it.

ROBOTS TO THE RESCUE

One of our dream projects is Robbi, our robot. Geneva Airport’s role is also to promote the Swiss innovation culture and that’s actually how we started working on this robot idea with a Swiss company called BlueBotics.

See full online article at:
www.sita.aero/air-transport-it-review

THE SOFT SIDE OF MUNICH AIRPORT

By Michael Zaddach, Senior Vice President IT, Munich Airport



We all talk about ‘seamless travel’, but the risk is that everyone has their own interpretation. We have to do something across the air transport industry to ensure a common understanding, to share data so we can achieve what we all say we want. It’s not something any one player can achieve.

Our own understanding is that the new technologies give us the opportunity to be what we call ‘contact sensitive’. To do this effectively we need to know the current situation of each individual passenger and then provide only relevant information at each stage of their time with us.

On the other hand, we earn 50% of our revenues from non-aviation sources, such as passenger parking, food and beverage, and retail as a whole.

So we also want to use the new digital channels to offer airport-specific services. We just have to strike the right balance, otherwise we risk alienating passengers. It’s very easy to turn your smartphone off or to delete an app.

“CAN I HELP YOU?”

Three years ago, we launched a program to take this further. At every airport there are staff sitting in one location waiting to provide information to passengers.

We wanted to make this a better service for everyone, so – with passengers involved at the design stage – we introduced InfoGate Counters, linking passengers to staff at the airport’s call center through the use of video conferencing.

Anyone not wanting to use their smartphone can go to any counter, press a button and speak to someone in their own language.

See full online article at:
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“WE’RE EXPLORING A COMPLETELY DIFFERENT MODEL, DESIGNED AROUND THE PHYSICAL LIMITATIONS OF A HUMAN BODY. WE WANT TO CREATE HUBS THAT ARE MANAGEABLE, NAVIGABLE, AND EASY FOR PEOPLE TO FIND THEIR WAY THROUGH.”

THE FUTURE OF AIRPORTS



DUBAI IS IN THE MIDST OF DESIGNING A NEW AIRPORT, EXPLORING A COMPLETELY DIFFERENT MODEL – ALL ENABLED BY TECHNOLOGY. IS IT THE FUTURE FOR AIRPORTS? DUBAI AIRPORTS’ CEO, **PAUL GRIFFITHS**, TELLS US MORE.





“IF YOU DOUBLE THE PROCESS FLOW, YOU DOUBLE THE CAPACITY. THAT’S FAR, FAR CHEAPER THAN HAVING TO DOUBLE THE AREA OF THE TERMINAL BUILDING. THERE’S BIG POTENTIAL FOR TECHNOLOGY HERE.”

So what’s driving the need for a new approach?

When I think of my own personal journey, it began while talking with someone who ran an airport. I was working for an airline and asked how they viewed customer relationships. He said: “We see airlines as suppliers of our customers.”

That was when I personally realized that attitudes and approaches had to change; and I decided to move into airports.

I believe we’ve now reached an inflection point – we have to see major change in the industry’s supply chain if we’re to respond to what’s happening in the outside world.

What are these outside influences?

First, demographic shifts. We’re seeing a huge increase in mobility, even in some of the poorer developing nations, where people can now get on an aircraft and travel long distances at costs that used to be only comparable to car and bus journeys.

Second, it took thousands of years for economic power to migrate from East to West – but now we’re seeing a shift back to the East in a fraction of the time. Meanwhile, more people want to live in cities, and more people want to be connected. They want to gravitate to a socially developed environment and be enabled with each other.

Third, we have to deal with the impact of a constantly growing global population and our impact on the planet.

Finally, and underpinning all of the above, we’re seeing massive technological breakthroughs every day.

All of these elements are changing the way we need to look at business and at this industry. Because if we don’t change, those who are driving this technological breakthrough will simply take the law into their own hands.

What’s the impact on airports?

In just 15 years we’ll see an additional 1.8 billion people traveling every year from Asia alone. So the creation and expansion of intercontinental hubs (which are created by airlines not airports) will continue to play a vital role.

Airlines will continue to need to connect networks to give people the ‘from anywhere to anywhere’ service they demand.

They’ll continue to find ways to create greater network efficiencies without falling foul of anti-trust and anti-competitive legislation, so long as rules prevent mergers across international borders.

Airports will need to make sure they invest sufficiently in cost-effective connection services to enable network efficiencies to be realized and to cater for increased mobility. Hubs will become hugely competitive, as more and more of the markets they serve become distributed globally.

Scale has always been important in airport development. Most airport managers are infrastructure managers. They build stuff, spending vast amounts of

money, creating newer and bigger facilities to cope with growth.

In Dubai alone we’ve spent about US\$13 billion in the last five years, creating major facilities to cope with the extraordinary growth that’s been happening. But how on earth can this continue?

We’ve run out of space, but what do we do about it? Do we build ever bigger airports? In my view, no.

With bigger airports, you get bigger walking distances, less intimate experiences, and greater difficulties in customers making connections. Few statistics are more important than the ability at a connecting hub for passengers to conveniently and easily connect between flights. It’s also incredibly expensive. And remember, this is an industry that, over the entire supply chain, struggles to cover its costs every year.

All of this has created a big problem. More daunting scale, much longer walking distances, greater transit times, and crucially, more anxiety for our customers.

What’s the solution?

Every single individual that goes through an airport has a different need, because they’re a human being. We may be creatures of habit in general, but individually we have very, very subtle differences in requirements. Different levels of experience and confidence.

We must get used to the fact that people have advanced technology in the palm of their hand. That doesn’t simply

mean that future airports should be developed with an infrastructure sufficient to handle all of the intelligence and technology needed to serve the customer. That’s far too expensive, and it’s not the way the world is progressing.

So what are the implications?

If people have that level of technology with them while they’re on the move, we need to think of ways to leverage that power to make their travel experience better.

Airport processes need to change, and fast. Take airport security. We need a technology breakthrough. We can now profile customers just by looking at their faces or taking their fingerprints.

We need to leverage that technology to take those processes out of the consumer’s way, and make sure they interact with the airport and the airline in a way that’s more pleasant, far more organized and far more connected.

If you take process out of the airport environment, you create space. And remember, the capacity of an airport is determined by the volumetric area you are deploying and the speed you can get people through.

If you double the process flow, you double the capacity. That’s far, far cheaper than having to double the area of the terminal building. There’s big potential for technology here.

And there’s a really good driver for this – it’s what our customers want. They don’t want to have to go through queues to check-in.

They don't want to have to go through all of the processes that we put in their way.

They want us to be far more customer-centric than that. So Dubai's aim is to seize this opportunity and turn it into something that will drive the way airports of the future look like. That means designing buildings in a completely different way.

What are you planning?

We're in the midst of designing a completely new airport. It's a massive 140 km² site with an ultimate capacity of 240 million passengers a year. It's 10 times larger than Dubai's existing airports, but to ensure we focus on customer-centricity, we're deliberately not building the same level of physical capacity as today's standards.

Instead, we're exploring a completely different model, designed around the physical limitations of the human body. We want to create hubs that are manageable, navigable, and easy for people to find their way through.

We're going to build 12 airports, each of 20 million capacity. It's completely scalable. We can start with four nodes at 80 million or six nodes at 120 million and gradually develop. Each node will be identical and completely self-contained.

This is all enabled by technology. We'll use technology to optimize the allocation of flights, so we can connect as many people as possible through the same hub. That will dramatically improve the utilization of the airport, the connectivity – and create an environment in which no-one will have to walk more than 400 meters from one plane to the next.



“PEOPLE WANT US TO BE FAR MORE CUSTOMER-CENTRIC. SO DUBAI'S AIM IS TO SEIZE THIS OPPORTUNITY AND TURN IT INTO SOMETHING THAT WILL DRIVE THE WAY AIRPORTS OF THE FUTURE LOOK LIKE.”

Technology and business transformation at the same time?

Yes. It has to be enabled by a huge integration of technology. Such as the technology of way-finding to tell people the shortest way to get from one plane to another, to give them the information they need to know about what's on offer as they pass through the airport.

And technology that enables us to present an increasingly competitive hub-based product to the world, as airports become more competitive.

This program also drives business transformation. We've got to get smarter within the supply chain between airlines, technology providers, airports and ground handlers.

No-one has proprietary ownership of the customer. The customer will increasingly choose who they want to interact with, just as we have seen in other industries. Airports must have the same attitude to future technology.

Might handing power to the customer create new problems?

Possibly. We have to be very careful, but if we don't do it, customers themselves will take control of the journey and it will be those who produce consolidated apps that will own that relationship.

We must whisk people through the airport without queuing, entice them with the best possible commercial offers, and work with the airlines to

make sure we're using the journey in the air to tantalize people about what they can expect on the ground.

In a changing world, where things apparently need to get bigger and bigger, what we're trying to do is make sure that we retain and enable the intimacy of the customer journey. Every one of our customers, from wherever they come in the world, will be able to do it their way. ■

FOR MORE

Go to the SITA Online YouTube channel and search 'Paul Griffiths'.



FULL INTERVIEW ONLINE

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RESOLUTION-READY

ETIHAD IS MEETING IATA'S RESOLUTION 753 THREE YEARS AHEAD OF DEADLINE, AS LAUNCH CUSTOMER FOR SITA'S BAGJOURNEY SERVICE. NOW THE AIRLINE CAN KEEP TABS ON EVERY CHECKED-IN BAG, FROM START TO FINISH, OF THE PASSENGER JOURNEY.

Buying goods online is part of daily life. As is the ability to track the goods' transit from distant shores to your home. If that can be done for hundreds of millions of packages – most of them sent by air – why can't it be done for airline baggage?

Why can't I use my smartphone to keep tabs on my baggage while I'm traveling, just as I can to keep tabs on my latest purchase?

PAIN POINT

Despite baggage mishandling rates falling by more than 61% since 2007 – lost and misdirected bags still represent one of the key pain points for passengers.

So passengers will doubtlessly be pleased to learn that the increased control they have over most aspects of their travel arrangements is now being extended to include baggage.

Before IATA's Resolution 753 (see box) becomes effective in June 2018, 81% of airlines expect to offer travelers the ability to use mobile devices to track their baggage.

FOLLOW THAT BAG!

For passengers flying UAE's national airline Etihad, that day is getting nearer. The airline is the launch customer for SITA's BagJourney service, providing a cost-effective and accurate means of tracking passengers' bags anywhere along the journey.

CLOUD POWER

Powered by the ATI Cloud, BagJourney uses baggage information messages (BIMs) passing through the message and distribution service BagMessage and provides the data to Etihad using a web API. See also: 'Empower your passengers', page 14.

For example, it will define if the bag is checked in, sorted, through security, loaded into a container, re-flighted, and re-loaded. The information can then be shared with the airline's crew and airport staff. In time, the same information will be available to passengers so they can follow their bags through a smartphone app.

FREEING DATA

More than 200 airports and 500 airlines use BagMessage, with the volume of data generated growing at almost 20% a year. BagJourney frees up use of this data.

Commenting on the major changes heralded by Resolution 753 and the launch of BagJourney, SITA's Nick Gates, Director Baggage Portfolio, says: "IATA's Resolution 753 has set the challenge. BagJourney is meeting that challenge, ensuring airlines can be 'resolution-ready'." ■

IATA RESOLUTION 753

Effective from June 2018, IATA's Resolution 753 requires IATA members to "maintain an accurate inventory of baggage by monitoring the acquisition and delivery of baggage".

They will need to:

- Demonstrate delivery of baggage when custody changes.
- Demonstrate acquisition of baggage when custody changes.
- Provide an inventory of bags on departure of a flight.
- Be capable of exchanging these events with other airlines as needed.

The purpose behind the resolution is not only to increase passenger satisfaction by preventing and reducing the incidence of mishandled bags, but also to speed up reconciliation and flight readiness for departing flights and help measure compliance to service level agreements.

The resolution is part of IATA's InBag program, designed to reduce mishandling, improve efficiency and enable innovation.

"BAGJOURNEY ENSURES AIRLINES CAN BE 'RESOLUTION-READY'. BUT ALSO, THANKS TO THE DATA IT GENERATES, IT'S ABLE TO DELIVER A GREAT DEAL OF EXTRA INTELLIGENCE."

NICK GATES
DIRECTOR BAGGAGE PORTFOLIO, SITA

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CONNECTING THE COMMUNITY

INCREASING CONNECTIVITY ACROSS THE CARGO COMMUNITY WILL DRIVE GAME-CHANGING PROGRESS. CHAMP CARGOSYSTEMS' CEO **ARNAUD LAMBERT** IS KEEN TO STRESS THE OPPORTUNITIES, BUT ALSO RECOGNIZES THE EXTENT OF CULTURAL CHANGE STILL REQUIRED IF ALL THE LINKS IN THE AIR CARGO CHAIN ARE TO BENEFIT.



“THE GREATEST BENEFIT FROM THE DIGITIZATION OF AIRWAY BILLS – EVEN THOUGH AMBITIOUS BUT SOUND TARGETS HAVE NOT YET BEEN MET – IS THAT EVERYONE HAS REALIZED THE ONLY WAY FORWARD IS TO WORK TOGETHER.”



ARNAUD LAMBERT

Arnaud Lambert has been CEO of CHAMP Cargosystems since February 2015. He was previously a member of the Executive Committee at the company and was Vice President of Global Service Delivery for CHAMP worldwide. He has more than 15 years' experience in the air cargo sector and previously held positions at Cargolux Airlines and Procter & Gamble.

Why the focus on connectivity?

At CHAMP, we have a very wide portfolio that covers airlines, ground handlers, GSA and freight forwarders, we provide solutions that deliver value for each of those segments. But we are convinced that the benefit needs ultimately to go to end customers: the shippers. They need to see the value of air transport versus other modes of transport. That requires that we, as the air transport industry, work together to up our game.

We are now offering the market a solution that provides value across those segments so they can work efficiently together. Our aim is not only to provide the right solutions for a specific segment, but also to provide solutions that will help connect the community and the industry as a whole.

Digitization of information and then sharing it – which are two different challenges – are definitely the way forward. In the past, retaining information for yourself gave you power. Those days are over. Now, having the information and, critically, sharing it is the game changer. The successful companies will be those that share, because by sharing information they will remove inefficiencies and unnecessary complexities.

Opportunities for efficiency gain can only come from a digitized information flow that applies across the whole chain.

Each actor, from carrier to forwarder, only represents one segment of the end-to-end logistics chain. And they will only be able to drive further improvements and cost savings if they collaborate, and that starts with the digitization of information.

So that requires a mind shift?

Yes. The biggest challenge is definitely a mind shift. Everyone says the same: “Yes, I want to do it”. But put them all in the same room, and they’ll change what they say, because they want to protect their part of the chain, thinking they can add more value than the chain as a whole.

Look at IATA’s target for electronic waybills. The target was 45% by the end of the year, but we’re still below 30% and there’s no idea yet of when we’ll make 100%. The technology is there, and of course digitization of information flow has a cost.

But it also has a return. The cost is in terms of intelligence that will add another layer of information that needs to be

managed. But it is the quality, timeliness, accuracy and accessibility of that big data that delivers value.

And that needs connectivity end-to-end?

If you look at the whole end-to-end chain, there are individual participants from multiple forwarders to handling agents to airlines, and then the process is reversed. You also have others involved such as customs. They all have different ways of working and different technologies.

If you want accurate and timely data you must use the same format, agree on the same meaning for items of information. Integration and meaningful connectivity between all those involved in the chain remains a considerable challenge.

There’s another factor driving change. In recent years, we’ve seen a 60:40 ratio for cargo carried between full freighters and passenger aircraft belly. But some of the latest aircraft can take up to 40 tons of cargo. So we’re now seeing a shift to a 55:45 ratio and that’s going to go further to at least 50:50. That means a change in airline business models.

Today, air freight represents about 18% of airline revenues – and in some cases going up to 25%. But with more belly capacity, cargo is going to become an integral part of the growth strategy for airlines. This requires specific systems to optimize the logistics flow rather than piggy-backing on passenger systems.

Are these challenges common across all tiers?

Everyone is operating in the same market, but the dynamics will differ depending on an airline's size and location. But no matter what the size of carrier, they all need to embrace e-commerce and they all need to treat their passengers and their part in the logistics chain differently.

If you're Tier 1 you can dictate some of the rules, but if you're mid-tier or low-tier you have to accept them. The complexity of the challenges will differ according to the carrier's size. Everyone needs to be able to manage their own future, but at the same time recognize that they're all part of the same entwined logistics flow.

What's the progress with paperless commerce?

Overall the air cargo industry has benefited from IATA's efforts to resolve the whole issue of cargo and IP standards. If that is well managed with the right levels of connectivity and no resistance, the best carriers will handle 90% of their transactions electronically. The rest will be done manually.

The introduction of the airway bill has really been about trying to replace a paper document with an electronic document. But for me, the benefit is not about getting rid of paper. The real benefit of e-freight is about sharing information across the logistics chain at all times.

And it's not about technology. That's all there. Once again, it's the mental shift required to accept sharing a single format document. It's the degree of willingness or reluctance to share. We have to accept that it can take time to accept this kind of mental shift.

But not everybody is going to be able to do that at the same time. And that's where companies like CHAMP can help, by enabling all parts of the chain to work

seamlessly together because not everybody will have the means or the will to do that themselves.

In 2014, you launched CHAMP Forwarding Systems. How is that progressing?

It's working very well. For us, this has been a strategic shift. In the past we dealt with airlines and ground handlers. Now we're covering the community end-to-end by moving into the forwarding space. We were already connecting close to 4,000 forwarders to the rest of the world. This is about providing solutions for that community.

What progress has been made with TRAXON and the customs authorities?

The acquisition of Traxon Global Customs was based on a strategy to get connectivity between all the actors. The service involves a gateway with a standard set of messages and, depending on where you land, the system will handle pre-clearance automatically. We have more than 50 countries considering the service – including all 28 EU countries, the US, Canada, Israel and many others, including some in Latin America.

We're following the same storyline that we use with CHAMP – here is a simple way of doing business through a set of modules, with just one set of messages through the core system. And you don't need to be a CHAMP core system customer to use them.

Customers such as BA, Lufthansa and Air France/KLM are using the system. This added value is now also being extended into areas of security.

The customs authorities want to make it as simple as possible. The World Customs Organization have also done a terrific job in encouraging use of the system, including for less developed economies. It's enabling some of those

countries to move closer to linking into the global e-commerce system as a whole.

How would you sum up the state of the market?

In terms of the market, Q1 was strong for everyone – linked to port embargos in the US, which shifted competing traffic from maritime to air freight. That, together with fluctuations in exchange rates and the lower cost of fuel, gave 'wings' to airlines.

In Q2, there was still a tail wind from Q1, but it began to fade. In Q3, we have not seen growth as expected, but there will be more variation in Q4. Overall I would expect 2015 to show growth over 2014, but more around the 4% forecast by Airbus and Boeing than the higher rates seen in Q1.

We have the advantage of being naturally hedged: if one region is weaker than the others, that weakness is diluted by other regions. Also, because a good deal of our revenue is earned on a recurring basis, we can continue to invest in the future.

CHAMP enjoyed major wins recently. How will you build on this success?

In addition to long-standing Asian customers such as Singapore Airlines, Philippine Airlines and Vietnam Airlines, we've also gained Japan Airlines – and this is particularly important, because our services cover the airline's substantial

domestic market, as well as its international markets. This is a major change for CHAMP, which has previously focused wholly on international trade.

We've also been implementing a complete transformation program at Cathay Pacific, another Asian leader and the biggest international cargo operator in the world.

We're also raising our profile in the US and in Africa, where for two years running we've won the international IT Provider of the Year Award. We already have several African customers but like everything in the region you need to be present physically to grow. That will be the direction for CHAMP in the future.

We'll be placing more focus on the forwarding market. We've made a start this year and as we expand our presence, we'll add more higher value-added services.

How would you summarize your future aims?

Connectivity is a theme that underpins everything. It starts with cultural change, breaking down barriers, getting rid of information silos, developing a strong, transparent, community view. CHAMP's task is to enable the community view to happen. We need to be able to demonstrate that transparency means you cede some control but you gain far greater benefit by being prepared to do so. ■

FULL INTERVIEW ONLINE

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THE INTELLIGENT ROUTE AHEAD



GULF AIR IS BLAZING THE TRAIL IN THE DEPLOYMENT OF BUSINESS INTELLIGENCE, BIG DATA, CLOUD AND OTHER TECHNOLOGIES TO HELP DRIVE ITS BUSINESS. THE AIRLINE'S DIRECTOR OF IT, **DR JASSIM HAJI**, EXPLAINS.

At Gulf Air we've been working to ease the deployment of business intelligence, big data, cloud and other technologies to help drive our business and enhance performance and efficiencies.

One striking example is our sharp focus on route profitability and technologies that will enable us to achieve excellence in this area.

Route profitability is critical for any airline. It provides a wealth of information to strategically tune the airline's network, so you can report on the revenue earned and costs incurred from each route.

BI PRIORITY

One critical enabler of Gulf Air's new route profitability capabilities is business intelligence (BI). For a network carrier like Gulf Air, one route feeds several others, and the profitability of one route depends on others. Everything relies on data clarity, the speed at which reports are produced and the overall accuracy of these reports in enabling airlines to make route profitability decisions.

Thanks to BI, we're able to rapidly deliver detailed reports showing airline network flow, and the impact that one route has on the entire network.

BIG DATA

BI's success depends on tools and techniques to quickly transform raw data into meaningful information. We've put into place a big data solution that draws on enormous amounts of data created in social media, especially Twitter, extracting what's relevant and text mining to find the data we need.

Determining the accuracy and quality of the results proved difficult at first and it relied heavily on human intervention and perception. But during manual reviews of sampled data, we identified opportunities and implemented improvements in the logic.

'DATA NOISE'

One issue we needed to address was 'data noise'. To manage it, you need strategic design and technologically sound logic,

so you must produce a technological structure that removes any irrelevant data that might skew overall data accuracy and quality.

After our evaluation and testing, we chose Cloudera, the open-source platform for big data. Its stability, wide usage, solution maturity, community support base, ease of integration, installation and configuration made it the perfect choice for Gulf Air.

In addition, to handle the vast amount of data, we implemented the Massive Parallel Processing (MPP) concept of big data so that we could simultaneously process data on different nodes of our infrastructure.

REGIONAL UNIQUE

At the same we defined Arabic sentiment analysis logic to include different regional dialects, formal and informal Arabic words, slang words and different spelling variations and mistakes.

Our developments to cater for languages and dialects has positioned us uniquely in the market. In fact, hardly any service providers in our region can deliver Arabic sentiment analysis, especially covering regional dialects.

'TEST AND LEARN'

We faced big challenges due to the complexity of Arabic sentiment analysis, coupled with the need to process a human language to obtain sentiment and feelings; especially with a complex language like Arabic.

To achieve a high-degree of accuracy, we applied a 'test and learn' approach, whereby we tested the results of the logic and reviewed their inaccuracies. Thanks to the learnings from this we could enhance the logic, build language exception rules and then test this new logic.

While it's not possible to reach 100% accuracy, we achieved an 84% accuracy level, which according to literature is a great achievement.

“ROUTE PROFITABILITY IS CRITICAL FOR ANY AIRLINE. IT PROVIDES A WEALTH OF INFORMATION TO STRATEGICALLY TUNE THE AIRLINE’S NETWORK, SO YOU CAN REPORT ON THE REVENUE EARNED AND COSTS INCURRED FROM EACH ROUTE.”

CLOUD IMPACT

Cloud computing is another critical enabler for Gulf Air. The impact of cloud on an airline’s business and business continuity cannot be underestimated.

Organizations are looking at cloud as a new and revolutionary way to deploy IT services in a more cost effective manner, while maintaining high availability and flexibility in the main data center and extending this to the business continuity center.

We started by adopting a private cloud computing service to cater for internal use and data confidentiality. That meant evolving our new generation data centers, making us one of the first implementers of this technology in our region.

HYBRID CLOUD

From our experience, we soon realized we needed to expand our cloud solution to achieve a wider reach, so we embraced a hybrid cloud approach. To achieve this we connected our private cloud to external services on public trusted clouds.

We’re now able to provide end-users with seamless services regardless of whether they’re in public or private clouds. On top of that, we’ve expanded our cloud reach over mobile-based clouds through mobile and tablet devices.

While we’re making headway in the cloud computing area, our partnership with SITA helps us to continually drive this forward. ■



PUSHING BOUNDARIES

Dr Jassim Haji, Director of IT, Gulf Air

Gulf Air carefully selects technology partners to help us continue to grow and add value. We also choose them based on their willingness to push technological boundaries. One such partner is SITA.

Our relationship with SITA spans over 40 years, and goes back to the early days of airline communications and automation. Areas of focus with SITA include connectivity, networking, voice communication and messaging.

In addition, SITA has always had a strong airport presence and we’ve never trusted anyone in our airports with our passengers as much as we do with the systems SITA provides us. The consistently high performance of SITA over the past few years and their 99% availability of systems at various locations makes them a great partner to continually work with.

FULL ARTICLE ONLINE

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AT THE HEART OF THE AIRLINE'S BUSINESS, DISTRIBUTION STRATEGY REMAINS A HOT TOPIC IN AIR TRANSPORT. BY **IAN TUNNACLIFFE** OF SITA'S PASSENGER SOLUTIONS PORTFOLIO MANAGEMENT TEAM.

DISTRIBUTION TURNING POINT?

Airline distribution is in the headlines again as Lufthansa introduces a €16 charge for each of its tickets booked by a travel agent using a GDS.

This appears to be an attempt to offset GDS fees and reduce the cost of distribution but it will have other effects. If it is successful travel agents will book flights directly at Lufthansa.com where the airline may boost revenue by selling ancillary services.

Conversely, the revenue management industry has long understood that yield from GDS bookings is higher than that for direct bookings in part because business travelers book later than leisure travelers, who typically book direct.

This is why Ryanair and easyJet have recently been so keen to make their services available in the GDSs.

Add to this the strong reaction that the Lufthansa move has provoked from travel agents, with talk of boycotts, lawsuits and a policy of booking via codeshare partners on Lufthansa flights, and it's clear that the initiative carries significant risk as well as potential rewards.

NDC

IATA's New Distribution Capability (NDC) continues to be controversial although peace seems to have broken out between the airlines' trade group and the GDSs which opposed it so vehemently.

As originally conceived, NDC would create a direct relationship with travel agents in which airlines create offers and agents convert the preferred offers into orders on behalf of customers.

A world in which all airlines distributed via NDC would not need GDSs. Nor would it need schedules and fares filing agencies like OAG and ATPCO.

On the other hand it would require huge investments in technology. The case for it being a cost-saving measure is far from proven.

MODIFIED

The rapprochement reported between IATA and the GDSs late in 2014 was based a modified vision of NDC in which the technology will be used to enhance existing GDS business processes.

The benefits of rich product information, personalized offers and truly dynamic pricing



have real value to airlines but they will be delivered via the GDS and consequently be subject to GDS booking fees.

The idea of a direct relationship between airlines and agents has been substantially downplayed.

WHICH VISION?

SITA's view of NDC is a little more nuanced. A world in which airlines manage direct relationships with their distribution partners requires huge investment in technology and business process change.

On the other hand the GDS vision, in which the NDC standard permits incremental improvements to the existing distribution landscape, has the merit of being clearly achievable.

Whatever the outcome SITA will implement technology to allow our hosted customers to participate fully. Where there are opportunities to facilitate change for the whole of the air transport community, SITA will seize them enthusiastically. It's what we do after all. ■

FULL ARTICLE ONLINE

www.sita.aero/air-transport-it-review





ENJOY THE INFLIGHT EXPERIENCE

HOW CAN TECHNOLOGY MAKE THE ONBOARD EXPERIENCE FOR PASSENGERS ENJOYABLE AND PERSONAL TO THEIR NEEDS AND WANTS?

Let's be frank. For many passengers, flying has lost its sense of adventure. If you're in economy, in the center row of any large long haul jet, there's not much romance in the journey.

You're not going to be distracted by the curve of the horizon or the ships milling below in the oceans, or by the track of a road across plains and mountains. A good book helps. And you may catch a movie you missed at home. But it's not the most exciting or engaging way of spending a day.

NO DIFFERENT

Wouldn't it be easier if being in the air was no different from being on the ground? If you could speak to friends, swap messages, listen to music and watch films of your choice, even keep tabs on work emails as you cross continents?

And wouldn't it make sense for the cabin staff to be able to anticipate passenger dietary and other needs – and know the names of who's sitting where? And for the cockpit crew to be able to stay in real-time contact with their operations centers, varying the flight plan to optimize comfort and safety?

And for the staff on the ground, and all of the companies whose parts and equipment make the craft fly, to have real-time knowledge of how that massively complex 400-ton triumph of engineering is working?





IT'S ALL ABOUT CHOICE

That's the reality of nose-to-tail connectivity. It's creating quite a stir across all parts of the air transport community – and it's being led by what Ian Dawkins, CEO of SITA OnAir, calls 'contextual engagement at 30,000 feet'.

"I was on a flight in Asia Pac recently," he comments. "It was a new aircraft fitted with the latest Wi-Fi and a great inflight entertainment offering. A neighboring passenger was watching Star Wars on his Samsung.

"I asked him why he chose that rather than the larger screen and the onboard options? He replied he was a frequent traveler and had seen all the movies on offer. So he'd downloaded what he wanted to watch, using the Wi-Fi system.

"That's what it's all about: choice. Wi-Fi is not the product. It's simply the means that passengers increasingly expect to find, in the air as on the ground, so they can choose how they spend their hours in flight.

"They appreciate the opportunity for voice calls – we enabled 14 million connections last year – but people absolutely want data connectivity so they can stay connected through social media and access the entertainment and services they want."

HEARD & UNDERSTOOD

There's little doubt that today's 'digital omnivores' want to be online, and they are by far the majority.

We're all aware that 97% of passengers now carry a personal electronic device on board – and they want it connected. And the more choice there is in devices, the more that usage and expectation of connectivity has grown.

The message has been heard: 66% of airlines say they'll offer wireless internet and multi-media services on passenger devices by the end of 2018.



“THAT’S WHAT IT’S ALL ABOUT: CHOICE. WI-FI IS NOT THE PRODUCT. IT’S SIMPLY THE MEANS THAT PASSENGERS INCREASINGLY EXPECT TO FIND, IN THE AIR AS ON THE GROUND, SO THEY CAN CHOOSE HOW THEY SPEND THEIR HOURS IN FLIGHT.”

**IAN DAWKINS
SITA ONAIR, CEO**

At present 28% of airlines offer internet on passenger devices, 23% offer multimedia on passenger devices and 25% offer mobile services such as voice, and SMS (2015 SITA Airline IT Trends Survey). So the intent is there and a broad understanding of the benefits is increasingly understood.

But are we thinking broadly and deeply enough about the implications of passengers being connected during their flights – and how it enables the airline-passenger touch points to be maintained and fostered?

There are two core elements: passenger satisfaction and extra revenue opportunities.

ENTER YOUR WORLD

Connectivity on the ground is already a hot topic, with numerous examples of airlines developing apps that enable real-time interactivity with passengers, guiding them through the flight process,

OPINION



CONTEXTUAL ENGAGEMENT AT 30,000 FEET

By Ian Dawkins, CEO, SITA OnAir

With passengers increasingly in control of their own travel arrangements – from booking to self bagdrop and online check-in – the downside is that airlines have very few touch points with their customers.

To find out why, we need look no further than what we're all carrying onto aircraft – one or more smartphones and tablets.

For airlines, Wi-Fi is more than a revenue source. It opens a whole world of helpful information as well as entertainment you can offer passengers, crew and cockpit. And it can all be personalized, to add real value.

For the full article online, go to www.sita.aero/air-transport-it-review

OPINION



HOW CAN WE IMPROVE THE FLYING EXPERIENCE?

By Tim Grosser, Head of Digital Transformation, IATA

IATA predicts a 6.7% growth in passenger traffic this year. At the same time, people are traveling more frequently and across more time zones. How can we make that experience better, providing relevant and timely information and insights back to the passenger?

This year we launched SkyZen, an app that matches wearable data with flight data.

For the full article online, go to www.sita.aero/air-transport-it-review

OPINION



CLIENT-CENTRIC DESIGN FOR INTERNET ONAIR

By Michel Dulery, Client Service Director, DigitasLBI

An aircraft was once the only space in the world where we're still not connected, so our brief from SITA OnAir was to create the best-in-class experience for passengers adjusting to the new reality of a connected air journey.

Business awareness and usage was our primary target – we know that free access to Wi-Fi is now a key driver. But we also wanted to deliver a more general awareness.

For the full article online, go to www.sita.aero/air-transport-it-review

way-finding for them, offering options for relaxation, retail therapy, food and drink, parking and so forth.

In the connected cabin, the process continues during the flight. Passengers can occupy themselves in their own digital world, whether on Facebook, downloading favorite movies, writing a business report or checking through onward travel options.

The airline can provide live information on expected arrival times, links to taxis, hotels and restaurants, guidance on rapid baggage retrieval at the destination. And with Application Programming Interfaces (API) now freely available through developer.aero for innovation of smartphone apps, the options are limited only by the imagination.

CREW TABLETS

The use of connected CrewTablets is also a major boost to interaction between passengers and crew.

Passenger dietary requests are more easily managed, with regular flyers' profiles available to crew, enabling a more personalized service.

And with tablets linked to existing IFE systems, the crew can send messages relating to the flight, or passengers can send messages to the crew asking for a drink, or a blanket, or any other question. It makes for a far more personalized and intimate relationship between the crew and the passengers.

WEIGHTLESS SHOPPING

Additional revenue opportunities can also be driven through connectivity. Maintaining the touch point with the passenger before, during and after the flight through Wi-Fi enabled smartphone and tablet apps facilitates access to ancillary services and partner options, such as hotels, car hire, even concierge services for theatre and concert bookings.

Once connected, passengers have extensive online browsing time available to buy goods sourced by the airline, and real-time credit card authorization makes crew retail a faster, smoother option.

Goods can be selected through online apps, paid for online or via the crew, and collected at the destination.

Space and weight are no longer restrictions for retail sales during the flight.

FOLLOW THAT AIRCRAFT!

There's a third element, which links to the operational aspects of nose-to-tail connectivity – and that's the opportunities generated for enhanced operations thanks to the massive volumes of data that are generated through a connected aircraft.

The benefits are well-rehearsed and self-evident in respect of engine data and aircraft performance. They include enabling optimization of flight operations and air traffic control, improved flight safety and passenger comfort and enabling constant flight tracking and black box data streaming.

KEEP EVERYONE HAPPY

"As the opportunities and their answers evolve further, they need always to be guided by a simple set of principles," according to Dawkins.

"We all want to narrow the gaps in the overall passenger experience, to provide a continuum between the traveler and the airline, extending from the decision to book a flight, through the flight itself, and after the flight has ended."

"To do that in the aircraft, first we need to provide Wi-Fi – preferably free to use. We need to ensure that services or applications available to the passenger are useful, desirable and useable. At SITA OnAir, our role is to make that findable, credible and valuable." ■

FOR MORE

Search the SITA Online YouTube channel for Ian Dawkins and Tim Grosser. See also: 'A nose-to-tail proposition,' Issue 2, Air Transport IT Review.



HOW TO HARNESS TERABYTES OF DATA

THE CHALLENGE OF BIG DATA IS MAGNIFIED WHEN CONFRONTED BY TERABYTES OF DATA PRODUCED IN-FLIGHT. IT DEMANDS A COMBINATION OF RAPID AND ROBUST CONNECTIVITY, FLEXIBLE PLATFORMS, APIS, AND THE CREATIVE DRIVE OF THE APP COMMUNITY.

A Formula 1 racing car is fitted with as many as 300 sensors. During a two-hour race they will measure up to 1.5 billion samples and produce six gigabytes or more of raw compressed format data, all of it transmitted wirelessly.

Based on analysis of the data, decisions can be taken on the other side of the world in real time that will shave crucial hundredths of seconds off lap times.

Now scale that up to one of the new breed of jets, such as the B787 or A380. They generate up to half a terabyte of data per flight (500 gigabytes).

REAL-TIME

Some of it will be stored for downloading on the ground. But increasingly, the demand is for real-time interaction, for the aircraft to be connected nose-to-tail throughout the flight.

The challenge is how to make the two-way flow of information as smooth and useful as that between the F1 car and its engineering teams?

FOUR ELEMENTS

“With everything in our lives becoming digitized, a million and one opportunities are being recognized,” says Ian Dawkins, CEO of SITA OnAir.

“We can use real-time decision-making, predictive analytics, create new programs, applications and content. We can make far better use of airspace, improve the aircraft turn-round process, take away passenger pain points through a smoother passenger process.

“But this depends on four critical elements. First, establishing the necessary levels of connectivity. Second, enabling everyone involved in a flight – airline, airport, ATC,

“WITH EVERYTHING IN OUR LIVES BECOMING DIGITIZED, A MILLION AND ONE OPPORTUNITIES ARE BEING RECOGNIZED.”

**IAN DAWKINS
SITA ONAIR, CEO**

OEM, crew, pilots, passengers – to have access to the data they need, at the same time.

“Third, dealing with the data management challenges implicit in a mix of legacy fleets. And fourth, building creative, low-cost, easy access apps to bring all of these elements together.”

UNLOCKING DATA

The task of handling multiple sources of data from a range of platforms can be supported by Application Programming Interfaces (APIs) through which app developers are able to unlock masses of available data and channel it into useful and easy-to-use apps.

API POTENTIAL

Combined with the introduction of standards and solutions offered by SITA OnAir, the use of APIs to create apps is an area of enormous potential for thousands of innovators, start-ups and small technology companies worldwide – particularly by linking into the IT ecosystem of passengers, crew and pilots.

The more big data is made to work, the greater the number of opportunities for improved operational effectiveness, enhanced passenger service, better decision-making and improved profitability.

It’s a win-win situation that’s there for the taking. ■

FOR MORE

APIs bring great promise to the nose-to-tail e-enablement of aircraft, with the SITA Lab making them available through its developer.aero API portal.
www.developer.aero



FULL ARTICLE ONLINE

www.sita.aero/air-transport-it-review



SITA MEMBERSHIP HAS ITS BENEFITS

MEMBERSHIP OF SITA HAS GOT A WHOLE LOT MORE VALUABLE WITH THE RECENT INTRODUCTION OF SOME EXCLUSIVE BENEFITS.

These benefits are designed to help our SITA members with efficiency, profitability and easy adoption of new services.

The offers include:

6 months free access to Horizon e-Learning

The Horizon e-Learning curriculum provides highly effective online training for users of the Passenger Solution Line Horizon suite of products.

The online training helps airline staff get fully trained on how to make best practice use of the Horizon suite. The offer is available to any member signing an e-Learning contract of 12 months or more after the offer date.

Free 2-day workshop on implementing Horizon merchandizing effectively

Effective merchandizing of ancillary services is one of the keys to airline profitability. SITA's Horizon portfolio includes a suite of solutions designed to enable airlines to charge fees for services, such as seat assignments, on-board meals and carrying excess baggage.

However, to get the best results from this opportunity the airline has to adapt its customer-facing processes from the point of sale right through to service at the airport.





Free installation charge for IP VPN@Airports connection

Available in over 160 airports in 75 countries where SITA has deployed AirportHub, IP VPN@Airports provides customers with a managed, secured, cost-effective and reliable IP connection to their VPN.

SITA is waiving the one-time bandwidth installation charge for members when ordering a new connection or bandwidth upgrade for IP VPN@Airports.

Air Traffic Control (ATC) messaging with no annual subscription

This offer makes SITA's ATC messaging service available to members with no associated annual subscription.

Our messaging service enables airlines to exchange ATC related messages with ANSPs (Air Navigation Service Providers) efficiently, by removing the complexity and cost of connecting to several ANSPs.

Free 2-month trial of BagJourney for members seeking IATA Resolution 753 compliance

BagJourney enables airlines to track bags as required by IATA Resolution 753.

This offer provides a free two-month evaluation of BagJourney to qualifying SITA members, with preferential member terms when contracting for an on-going service. See 'Resolution-ready,' page 30.

Discounted network consulting

SITA provides consultancy to enable airlines to optimize the performance of applications over their networks. This offering provides all members with a discount in the cost of related consulting engagements, provided those engagements are valued at US\$50K or greater.

Free access to SITA's Flight Information API for 3-months

SITA's Flight Information API (Application Programming Interface) enables rapid development of new applications by providing easy access to structured, accurate flight information for application developers.

This offer will provide qualifying members with free access to the API for three months, with preferential member terms when contracting for an on-going service.

For those members who have just joined SITA or organizations thinking of becoming a member, we have launched a set of offers that can be used within the first 12 months of membership.

The offers include:

Free certification of common-use application

This offer provides a free certification of one application for use on AirportConnect CUTE workstations or CUSS kiosks. The offer is available to airlines placing an order for a relevant certification within their first year as a SITA member. Conditions apply.

Additional discount on network consulting

SITA provides consultancy to enable airlines to optimize the performance of applications over their networks.

On top of the discount available to all members, new members are entitled to an additional discount in the cost of related consulting engagements, with no minimum engagement value.

Free IT Trends Benchmark

This offer provides new members with a customized benchmark review and analysis of their business against the global results from SITA's Airline, Airport and Passenger IT Trends Surveys, as appropriate depending on the member's type of business.

This offer is subject to the new member completing the airline or airport IT trends survey and full benchmarking will require SITA access to new member survey responses. ■

FOR MORE

www.sita.aero/membership



AWARD WINNING MEMBERS

A special ceremony took place at the Annual General Assembly Gala Dinner in June to mark three membership milestones. Ethiopian Airlines celebrated 60 years of SITA membership, while Lebanese Air Transport and Royal Jordanian Airlines both commemorated 50 years of membership. Presenting the awards was Jappe Blaauw, SITA Council President and Chief Transformation Officer, KLM.

From L-R: Jappe Blaauw, SITA Council President; Kemeredin Bedru: Ethiopian Airlines; Ashraf Ayoub: Royal Jordanian Airlines; Ibrahim Chehab, Lebanese Air Transport.



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